Pentium II PCs show big performance gains over older systems. Servers & PCs, page 43

Web site [illegible] and other [illegible] The Internet page

COMPUTERWORLD

SPECIAL REPORT

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com
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License law may limit liability

▸ *Software contracts may threaten user recourse*

By Lisa Picarille

IMAGINE THAT you purchased software that somehow wiped out all your data, damaged other applications and brought your company's business to a halt.

Once you stop reeling from the damage and are on the road to recovery, you might decide to seek restitution or compensation for your troubles — especially if the problems can be traced back to a flaw or virus in the program.

But if two groups of leading software vendors have their way, licenses will be put under the jurisdiction of contract law, which could limit developer liability and diminish user rights.

Unbeknownst to many users, the Software Publishers Association and the Business Software Alliance, two Washington-based trade associations, are using their collective muscle to push through a law that would seriously limit developer liability for buggy, defective or virus-ridden software. The proposed changes are being drafted; if enacted, they could become law by year's end.

Consumer advocates, including Ralph Nader, and attorneys for user groups such as the Soci-

License law, page 111



Monitoring tools can swamp nets if left unchecked

By Patrick Dryden

IN THE VIETNAM WAR, villages often were "destroyed in order to be saved." A similar fate awaits networks.

Information systems managers under the gun to maintain business-critical networks are turning to diverse monitoring tools for help. But without careful use, those tools can overwork the devices they are supposed to manage and swamp valuable bandwidth with their own traffic.

For example, one campus backbone had a 20% utilization rate without any user activity at all, because of "network static" from overmanagement, according to Bryan Bates, an analyst at SupportNet Consulting, Inc. in Calgary, Alberta.

Simple Network Management Protocol traffic was extremely high because multiple management consoles polled internetworking gear and 350 user stations at default settings of every second instead of every few minutes. With so much

Monitoring tools, page 14

Exchange rollout hits snags

By Barb Cole-Gomolski

MICROSOFT CORP. introduced its Exchange messaging server last year with much hype. So why aren't users deploying it?

Analysts predicted Microsoft would sell 5 million seats of Exchange last year, but International Data Corp. puts actual sales at 2 million. By contrast, Lotus Development Corp. sold more than 4 million Notes licenses last year, according to IDC.

Customer commitment to Exchange is strong, but sales have

Exchange, page 17

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Component Broker middleware slated to debut in St. Louis. Page 12

MICROSOFT, CISCO TOP INTEROP
Vendors team up to boost Windows NT's Active Directory. Page 16

UP FRONT

Java politics

For all that's been written about the technical attributes of the wildly popular Java programming language, I'd argue that it's the political implications that are more profound for corporate IS.



Java is important because its programs can be downloaded and run without installation. Once they are finished, they disappear. That's unlike any software corporate developers have ever created.

Traditional applications were created for use within the predictable walls of the corporation. Not so with Java. A Java program potentially may be used by any of the tens of millions of people on the Internet. Chances are you don't even know who your users are.

So does that make you a commercial software developer? In many ways, yes. The decisions about design, navigation, performance and interface that developers face are equally applicable in a Java environment. And like a commercial application, a good corporate Java application will draw repeat business while a bad one will reflect poorly on the organization.

Savvy Java developers can redefine the relationship with the customer.

That's where the politics comes in. Savvy developers writing Java applications for the corporate Web server now have the chance to redefine relations with the customer. And when was the last time IS people had a chance to do that?

Success won't come without pain. Many sales organizations will resist the loss of authority. Some CEOs won't realize Java's potential. And plenty of IS organizations will write bad Java applications because, well, they've always written bad software.

But for those who see the opportunity and seize the moment, the potential is there to dramatically improve your importance in the organization. Check out our special report beginning on page 73 for more details. And go for it!

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE

BY RICH TENNANT



"No thanks. But I would like one more chance to see if I can edit my AUTOEXEC.BAT file so my programs will appear when I start up my computer."

E-mail Rich Tennant at thewave@tiac.net

AT&T pulls CIO off of billing project

By Thomas Hoffman

IT'S A CHALLENGE that every CIO has to face sooner or later: how much time to personally invest in individual information technology projects that are critical to the company's competitiveness.

The issue was reignited last week after AT&T Corp. removed Ron Ponder, its executive vice president and chief information officer, from orchestrating the overhaul of its nationwide billing systems.

AT&T has been struggling for four years to build a new billing system that can create a single consolidated statement for long-distance, local, wireless and Internet services for its 90 million customers.

Ponder, 54, who remains AT&T's CIO, will now be in charge of creating a "blueprint" for integrating AT&T's network with its partners' systems, a company spokeswoman said.

Frank Ianna, 48, one of Ponder's lieutenants, has taken over responsibility for completing the billing system, as well as Ponder's former responsibilities for AT&T's internal year 2000 conversion work, customer database marketing and customer care systems.



AT&T CIO Ron Ponder will work on integrating AT&T's network with its partners'

CIOs are ultimately accountable for the success or failure of IT projects, but few can afford to spend too much of their time directly managing day-to-day efforts. "It depends on the magnitude of the project and its importance to the organization," said James Wright, director of information services at Texaco, Inc. in Houston.

That may have been the case at AT&T.

Billing "is a critical element to AT&T's competitive situation with MCI and Sprint, so it's almost incumbent upon [Ponder] to do what had to be done to bring the project in on time," said Len Tenner, CIO at Hewitt Associates, a Lincolnshire, Ill.-based human resources outsourcing and consulting firm.

On the other hand, making CIOs responsible for individual IT projects "is like giving a [chief financial officer] responsibility for revamping the balance sheet — that's not his or her responsibility, it's something they should delegate," said Jim Jones, managing director of Information Management Forum, an Atlanta-based information systems executive user group in Atlanta.

For CIOs to get bogged down in day-to-day project management "is not an appropriate use of the position," Jones said.

Instead, CIOs should be looking at "bigger picture" issues, such as how an organization can use its existing information more effectively and how emerging technologies can be used to help their companies gain competitive advantages, Jones said. □

FCC rate reform mixed bag for users

By Kim Girard

BUSINESSES THAT USE more than one telephone line will pay more for service, but heavy long-distance users should get a break under sweeping new Federal Communications Commission regulations.

The new rules, which were unveiled last week, angered some users and drew fire from the local carriers and online service providers who say they will be harmed by new rates.

"I hate it," said Matthew O'Brien, a senior analyst at Prodigy Services Co. and former president of the Communications Managers Association, a Morristown, N.J.-based user group.

Under the new plan, multiple business lines — often used for Internet access — will cost customers more. Some online service providers are grumbling about potential loss of business.

Business customers that use more than one phone line will be charged $2.75 per line beginning in January, a price that could cripple some businesses that have many lines but make minimal long-distance calls.

The FCC cut the access charges long-distance firms pay to local carriers to connect their long-distance lines to the local loop. The access charge system is moving to flat-rate from usage-based pricing, and the pricing is being brought closer to the actual cost of maintaining the local network, FCC officials said.

The new regulations will be a wash financially for most customers, said Jeff Kagan, president of Kagan Telecom Associates in Atlanta. "For the average customer, it's not going to have an impact. Businesses spend a lot on long-distance [service], and those prices will go down," he said.

But for telecommunications managers, Kagan said, "forget about planning your budget" over the next year or so.

The FCC at a later date will consider whether Internet service providers should pay access charges to use local lines. □

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HDS ratchets up power of Skyline mainframes

By Tim Ouellette

HITACHI DATA SYSTEMS, INC. this week will announce a boost to the most powerful mainframe system on the market.

Sources said the Santa Clara, Calif., firm is increasing the capacity of its Skyline mainframes from 120 to 150 MIPS, and is expected to sweeten the deal with integrated year 2000 testing tools.

The new Skylines will hit the streets in the fourth quarter.

ONE-TWO PUNCH

The Skyline combines traditional water-cooled technology with newer, but less powerful, CMOS technology.

Although CMOS is more efficient and less costly to maintain than the older water-cooled systems, CMOS processors still lack the punch that water-cooled systems can bring to the table.

That's why Skyline has been the main reason HDS's mainframe market share jumped from 6% in 1995 to more than 20% last year, analysts said [CW, April 28].

Additionally, HDS will boost the power of its all-CMOS Pilot systems to 62 MIPS, with delivery expected by late summer. Observers expect IBM to ship its next-generation CMOS machine with similar MIPS capacity by midsummer.

The year 2000 tools add spice to the mainframe offering, though they won't drive sales, observers said.

Instead, the tools "make the HDS machines different from those of competitors IBM and Amdahl [Corp.]," a tough task when they all develop the same type of plug-compatible mainframes, said Mike Kahn, CEO of The Clipper Group, Inc. in Wellesley, Mass. □

Novell sues cluster busters

By Laura DiDio
LAS VEGAS

USERS AND ANALYSTS were shocked to hear that three former Novell, Inc. employees had formed a start-up to build clustering technology for the rival Windows NT Server platform.

So was Novell, which quickly filed suit 10 days ago alleging theft of trade secrets. It won a temporary restraining order last week against use of its clustering technology.

NAME GAME

The former Novell workers initially dubbed their company Wolf Mountain Group, Inc. but agreed to give up the name. Wolf Mountain is the code name of Novell's leading-edge clustering technology, which is more advanced than Microsoft Corp.'s competing Wolfpack technology.

Neither Novell nor Microsoft has shipped its respective clustering products, which allow processing to be spread over multiple, integrated network servers. That helps businesses create a highly scalable, fault-tolerant and more easily managed network, with no single point of failure.

"It's unbelievable. How could anybody be so stupid or naive as to think they could get away with something this obvious — right down to using the Wolf Mountain name," said Howard Marks, chief scientist at Networks Are Our Lives, Inc., a consulting firm in Sherman, Conn.

Constables last week seized PCs, diskettes and other materials from the homes of Wolf Mountain Group founders Jeff V. Merkey and Darren Major and employee Larry Angus.

None of the three defendants returned telephone calls by press time. But in a statement issued by their attorney Brian Beneveneto, all three denied any wrongdoing.

Beneveneto said his clients have no problem complying with the restraining order.

"We have a contract to keep in confidence trade secrets," he said. "But the contract doesn't prohibit us from competing, and that's what Novell is trying to do."

"I thought it was a joke," said Robert Abate, chief information officer at GTN Technologies in Lawrenceville, N.J., as he toured the show floor at last week's Networld/Interop '97 here. "When I realized it wasn't, I knew there was no way Novell was ever going to let Wolf Mountain see the light of day as an NT clustering solution." □

Laptop famine turns to feast

▸ *In switch from '96, notebook PCs pile up*

By Mindy Blodgett

LAPTOP USERS and vendors say the severe notebook shortages of a year ago have mostly abated.

In fact, the leading notebook vendor reports the opposite problem. Officials at Toshiba America Information Systems, Inc. said an overabundance of laptops has created a backup of stock in the reseller channels.

Notebook shortages have also essentially ended for IBM PC Co. and Compaq Computer Corp., industry analysts said.

Observers said if inventories begin to pile up, a price war may be imminent — more good news for users.

TOO SOON TO TELL

James Staten, an analyst at Dataquest in San Jose, Calif., said it isn't clear whether the Toshiba inventory logjam indicates an overall slowdown in the market.

"At this point, it looks as if some notebook vendors made some forecast mistakes," he said.

"However, I do think that, for many reasons, we will see some price cuts in the coming weeks," Staten said.

Vendor	Units shipped
Toshiba	600,000
IBM	213,000
Compaq	152,000
Texas Instruments	91,000
Dell	70,000
Total market	1.35M

Source: Dataquest, San Jose, Calif.

"Some vendors have shortages; others have inventory backed up," said Randal Giusto, an analyst at International Data Corp. in Framingham, Mass. "It's too soon to tell what this means for the overall market."

Users said notebooks are relatively easy to come by, contrary to the market of a year ago.

"I can order a laptop now and get it within three to five days," said Asmar Madyun, technical support manager at the network services division of AT&T Corp. in Berkeley, N.J. "Last year, it could take six weeks."

Last year, vendors blamed the shortage on the lack of components such as display screens and lithium ion batteries, as well as greater-than-expected demand.

"The component situation has improved," said Van Andrews, senior vice president at Toshiba. "We can now get what we need."

But industry observers said some popular, high-end laptops are still in short supply.

For instance, Fred Winograd, information systems manager at the financier Montgomery Securities, Inc. in San Francisco, said it is still hard to obtain Digital Equipment Corp.'s HiNote Ultra notebooks.

"The delays are so bad, we may consider switching to another vendor, which we don't want to do," Winograd said. □





NEWS

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6 [illegible] build a fiber network helps users plan online investments.

10 [illegible] Unix vendors, but [illegible] NT may not be a reality [illegible]

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20 A Virginia HMO shares [illegible] of an in-house application [illegible] corporate customers to track health [illegible]

24 Colleges recruit IS [illegible] to design high-tech [illegible] that companies seek students with Cobol to Internet savvy.

32 An Illinois start-up promotes wireless touchpad devices to give database workers data access.

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113 Take a lawyer to lunch — as the Web expands, you may need him, Frank Hayes writes.

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43 Intel's Pentium II design improves performance but could limit the variety of products based on it.

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64 A look at female-oriented Web content is one reason male dominance persists among online citizens, report says.

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Group proposes unlimited domain name registries

By Matt Hamblen

GOT $20,000 to spare? Then you can have your very own World Wide Web domain registry business and dole out new Internet domain names.

That could happen under the latest proposal by the international group that is reorganizing the way the seven new domain names — .firm, .store, .web, .info, .nom, .arts and .rec — are handed out.

When the domain names accord was signed May 1 by 80 groups in Geneva, it called for 28 registries worldwide to be picked by a lottery.

MANY CRITICS

But less than a week later, the accord's creators said there was too much criticism of the lottery and the limits on registrations. So they proposed the unlimited option instead.

While some observers praised the authors of the accord for their flexibility, others said the original idea of 28 registries was bad enough — an unlimited number would be chaos.

With that many registries, one critic said, groups might barter for the least expensive registration, searching the world for a country that might not adhere to strict trademark rules recognized in some Western countries.

TROUBLE AHEAD?

Carl Leubsdorf, webmaster at Calvert Group in Bethesda, Md., predicted problems.

"The only way I see around somebody registering all those new suffixes with my name and putting up malicious sites is to register them all with my name," he said. "With unlimited registries and names, you're widening the potential for disputes, not narrowing it. I see costs, not benefits."

And the seven new domain names will make it necessary for users to find more structured search engines to locate Web sites, said Ken Crutchfield, director of electronic commerce at The Dun & Bradstreet Corp. in Parsippany, N.J.

"Business for the lawyers will take off. It already has taken off," said trademark attorney Andrew Bridges, head of the trademarks practices group at Wilson, Sonsini, Goodrich & Rosati in Palo Alto, Calif.

Major companies with famous names will be scrambling to register their brands as .web or .store in addition to .com, mainly to prevent competitors from infringing upon them. But at companies with names that aren't famous, marketing personnel and webmasters should think twice about registering the same name with multiple suffixes, Bridges said.

"With unlimited registries and names, you're widening the potential for disputes, not narrowing it. I see costs, not benefits."
– Carl Leubsdorf, Calvert Group

The goals of the accord are to create international competition, to increase the number of domain names available and to create an international resolution process for domain name disputes.

Today, domain name registrations rest solely in the hands of Network Solutions, Inc. in Herndon, Va.

"The fight over that [Network Solutions] monopoly is what this is really about," said analyst Carl Howe, director of networks at Forrester Research, Inc. in Cambridge, Mass.

Howe praised the accord for making the registration process international, but he said he wished fewer new domains had been proposed to reduce confusion for end users. □

Clarification

"Money talk" on page 72 (Year 2000 Scoreboard) of the May 5 issue of Computerworld gave incomplete data on a Meta Group, Inc. survey of 300 of its customers:
- 97% of the companies surveyed said year 2000 work will consume from 0% to 25% of their information technology budgets this year.
- 17% said they will spend from 0% to 25% in 1998 and 1999.



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GTE OPENS ITS WALLET BY:

- **Paying $616M for BBN, an Internet provider focused on business. BBN has 3,300 customers.**
- **Investing $485M for part of Qwest Communications' fiber-optic network.**
- **Hiring Cisco to help manage its network. GTE could buy more than $1B of Cisco products over five years.**

BBN customers counting on GTE's deep pockets

By Kim Girard

GTE CORP.'s $616 million cash bid for Internet service provider BBN Corp. and GTE's promise of a new national fiber network are good news to users looking to future-proof their online investments.

ONLINE TECHNOLOGY

"Our [online] traffic has doubled every quarter for the last five quarters," said David Bohnett, chairman and CEO of GeoCities, a World Wide Web site host in Santa Monica, Calif. GeoCities uses several T3 lines from Cambridge, Mass.-based BBN.

"It's of interest to us that our provider has the capital to meet our growth," Bohnett said.

By building a nationwide network that uses fiber from Denver-based Qwest Communications Corp., GTE plans to add long-distance and Internet access offerings and compete with telecommunications giants such as MCI Communications Corp. and AT&T Corp. GTE in Stamford, Conn., is already the country's largest local telephone company.

"The addition of GTE's financial support will do nothing but make BBN stronger," said William Rice, director of corporate marketing at Liberty Financial Cos., a $48 billion asset-management company in Boston.

Rice said BBN helped his firm develop two electronic commerce sites in January. Liberty uses BBN's technology to identify customers and encrypt mutual fund trading and account access information.

"The deal will give GTE national clout," said Matthew O'Brien, past president of the Communications Managers Association, a telecommunications user group in Morristown, N.J. GTE cut its learning curve by buying BBN's Internet expertise instead of building its own, he said. But for BBN customers, the deal should mean few changes, he said. □

Pentium II in a gallop

▶ *Boost in performance speeds real-time apps*

By April Jacobs

INTEL CORP.'s Pentium II chip appears to be a boon for financial and insurance companies, providing more horsepower than ever for high-speed, real-time applications such as trading and imaging.

Users at some of the country's top insurance and financial firms say they are getting as much as 50% performance jumps in their applications using the new Pentium II, compared with current Pentium and Pentium Pro-based machines.

With speeds of up to 300 MHz and onboard management that allows network managers to poll end-user machines for troubleshooting purposes, Santa Clara, Calif.-based Intel's Pentium II looks promising, analysts and end users said last week.

For example, at Bear, Stearns & Co. in New York, end users need lots of raw processing power to calculate bond indexes and conduct trades. The faster those tasks are completed, the more competitive the company is, said Arthur Kerins, a vice president at the firm.

TIME IS MONEY

"We can calculate things in half the time, which gives us an advantage," said Kerins, who noted that time is truly money in the trading business.

Kerins said the company ran a 266-MHz Pentium II-based machine against a Pentium Pro 200-MHz machine to determine how much faster it would be able to run some financial applications. The performance was at least 50% better, he said. He said 80% of the company's 10,000 users will get Pentium II-based machines in the next few years.

Intel's Pentium II pricing

Speed	Price
233 MHz	$636
266 MHz	$775
300 MHz	$1,981

At Princeton, N.J.-based Merrill Lynch & Co., Vice President Ritch Gaiti said he wants plenty of headroom when he purchases new machines and the ability to give financial consultants access to information quickly. He added that he is impressed with the Pentium II's performance.

GOOD POSITION

Analysts said the Pentium II is well-positioned for the market, with vendors aiming their first releases at high-end corporate users and multimedia-intensive applications.

Some of the multimedia applications could be Internet-related, as is the case at Merrill Lynch, which provides consultants with intranet-based information. The heavy use by insurers of workflow and imaging to process claims is another targeted market.

Indeed, Pentium II-based imaging workstations and 233-MHz Pentium II-based desktops aren't far off, predicted Bruce Nash, senior vice president of technology services at Robert Plan Corp., an insurance company in Uniondale, N.Y.

TOO MUCH?

But despite the attractive performance jumps, Nash said the Pentium II could be too pricey and overpowered for the average end user. A 300-MHz Pentium II chip, which is aimed at the workstation market, costs $1,981, compared with about $550 for a Pentium Pro chip.

"Price is a concern to us, so we'll be swapping out processor boxes and retaining monitors and keyboards to try to keep costs more in line," Nash said.

But optimistic Intel officials say the pricing for the Pentium II won't be an issue for too long because prices are already close to $2,500 for entry-level systems. □

Already a bug?

Intel last week said it is checking out a reported bug in the Pentium II chip. If the bug is confirmed, Intel said it will issue a statement about it within a few days.

The alleged bug involves errors that occur with calculations of large negative integers. The bug is detailed at Robert Collins's "Intel Secrets" World Wide Web site (www.x86.org), an independent site dedicated to Intel-related information.

Intel said it is taking any reports of bugs very seriously but noted that all chips have what it calls errata — errors that can occur under certain operating conditions. Intel posts information about those errors at its Web site to alert users who might be affected, marketing director Richard Dracott said.

Intel appears to be handling this potential bug much differently from the Pentium floating-point bug that made headlines in 1994.

Then, Intel tried to downplay the bug.

— April Jacobs

Pentium II design improves performance but may limit PC variety. Page 43

DEC, HP to embed COM architecture

By Sharon Gaudin

MICROSOFT CORP. is trying to push its Common Object Model beyond its Windows platform via agreements with Digital Equipment Corp. and Hewlett-Packard Co. to embed it in their operating systems.

The move is generally viewed as Microsoft's attempt to strike back at the recent flurry of support for rival Common Object Request Broker Architecture (CORBA). Sun Microsystems, Inc., IBM, Oracle Corp. and Netscape Communications Corp. rallied together about a month ago and vowed to adhere strictly to CORBA standards so their products would work together seamlessly [CW, March 17].

Common Object Model (COM) is an Internet-enabled offshoot of Microsoft's OLE architecture that lets developers build and reuse distributed software components.

Although Windows-specific, Microsoft lately has pushed to move it onto a few Unix platforms. To combat charges of being proprietary, Microsoft plans to let COM link applications and objects across a mixed Windows NT and Unix environment. That would allow them to communicate and invoke one another.

These Digital and HP platforms will support COM before year's end:

Digital	• Digital Alpha
	• OpenVMS
	• Unix
HP	• HP-UX

COMING SOON

Digital is slated to provide COM capabilities for Digital Alpha, OpenVMS, Digital Unix and Windows NT platforms, all before year's end. HP is expected to put COM on HP-UX by year's end.

HP and Digital also support CORBA. Digital was the first to offer COM/CORBA integration.

The head of information technology at one of the country's largest banks said Microsoft's plan won't raise any flags for him. He requested anonymity.

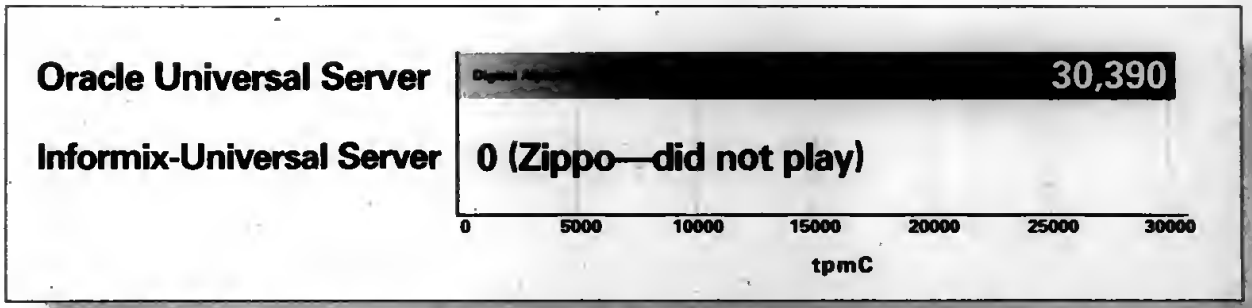
"Unless they talk about COM working with CORBA, I'm not going to be all that interested," the manager said. "We've already got [object request brokers] out there on my system. There's no reason to change just because suddenly DEC and HP are talking about COM."

"A Microsoft alliance isn't going to affect my life one whit," agreed Frank Manci, a network technical manager at Colonial Savings F.A. in Fort Worth, Texas. "If you're not in a homogeneous Windows environment, how can you realistically consider COM as an option, even if Microsoft throws you this bone?" □

Oracle vs Informix
Benchmark Leader vs Bench Warmer

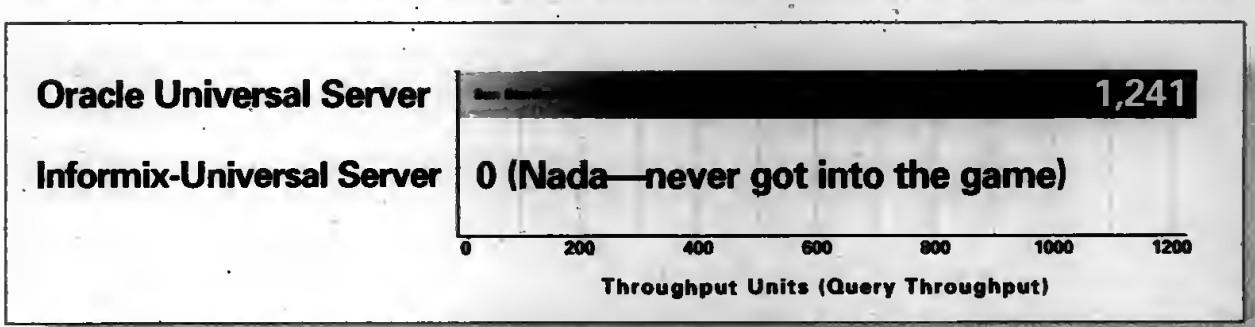
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Volatility rules database market

▸ *Users face minefield of product choices*

By Craig Stedman

THE DATABASE market is in a state of flux and uncertainty because of three factors: hard times at some vendors, a blizzard of major product releases and the enterprise specter of Microsoft Corp.

With, two major database shows on tap, starting with DB/Expo '97 in San Francisco this week, the convergence of those issues creates a minefield for users who are plotting their database strategies.

On one hand, Oracle Corp. appears to be firmly in the driver's seat because of recent financial slipups at both Informix Software, Inc. and Sybase, Inc. But Oracle itself faces the challenge of transitioning users to its upcoming Oracle8 database.

And Microsoft is turning up the competitive heat as it tries to push into the corporate database market with the comparatively low-cost combination of Windows NT and SQL Server.

"There's a lot of things going on, and it's volatile out there," said Tony Percy, an analyst at Gartner Group, Inc. in Stamford, Conn. For database purchases below the mainframe level, users looking for safe havens are expected to gravitate "more and more around Oracle and Microsoft," he added.

The University of Utah in Salt Lake City chose Oracle over Sybase for a new imaging application. "Both were capable of handling what we're doing, but [Oracle] was an easy choice. They were making money," said Don Baune manager of information technology at the school's radiology department.

Fidelity Investments in Boston also is turning to Oracle to run a report-sharing application and to replace Sybase as a staging database for its data warehouse.

But that is due to functional and performance reasons rather than the fallout from Sybase's 1996 financial losses. Fidelity remains a big Sybase user, said Barry Rosen, principal data warehouse architect at the financial services firm. "Once you're into something, it's hard to back out," he said.

The American Medical Association (AMA) is in a similar position after Informix's $140 million first-quarter loss [CW, May 5]. If Informix's products suffer, "maybe it would finally be time to go to big brother Oracle and be assimilated," said Jack Look, a data architect at the Chicago-based AMA. "But I'm not worried at this point."

SWITCHING HURTS

The pain-of-switching vendors is one reason market research firm International Data Corp. in Framingham, Mass., doesn't expect Oracle to significantly expand the 37% share of the Unix and Windows NT database server and tools market it had last year.

Pending rollouts of products by all the big database vendors also confuse things. And Microsoft is aiming to gain market share from the bottom up with commodity pricing and its one-vendor-fits-all approach.

"I don't think Oracle can be very comfortable, because the market is getting redefined out from under it by Microsoft," said Stan Dolberg, an analyst at Forrester Research, Inc. in Cambridge, Mass.

Despite the muscle-flexing "Scalability Day" it plans next week, Microsoft isn't enterprise-ready yet because of the limitations of Windows NT, analysts said. But a SQL Server release now in the works reportedly will let users scale beyond the current 200G-byte data storage limit to 1T byte.

For users such as Villa Maria College in Buffalo, N.Y., the lure of cutting costs by going all-Microsoft is hard to resist.

Villa Maria is preparing to move its administrative applications from a Unix/Sybase setup to Windows NT and SQL Server. "If I had the money, I would say, 'Let's stay with what we have,'" said Christine Palczewski director of computer services at the college. "But you have to look at the bottom line." □

COMPARING THE DATABASE VENDORS

	Strengths	Weaknesses
Oracle	• Scalable database and tools • Integrated applications	• Unproven in commodity markets • Competes with key independent software vendors
Informix	• Scalable database • Ties to resellers	• Weak development tools • Lacks Windows NT market presence
Sybase	• Vertical market presence • Strong tools and middleware	• Poor marketing • Lacks key database features
Microsoft	• Desktop dominance • Commodity pricing	• Unproven scalability • Supports only Windows NT
IBM	• Full product set • Enterprise installed base	• Poor marketing • Lacks indirect channels

& **Oracle8 adds end-user features, but will be complex to manage. Page 47**

SHORTS

U.S. eases encryption rules

The U.S. will let vendors export financial-transaction software for the Internet without requiring a key-recovery scheme, the Commerce Department said. The ruling is aimed at promoting commerce over the Internet. U.S. companies that export other kinds of software with strong encryption must still give designated third parties a way to decode data so that law-enforcement agencies can access data for criminal investigations.

IBM acquires all of Advantis

IBM will spend $450 million to purchase Sears, Roebuck and Co.'s 30% stake in Advantis, the services arm of IBM's Global Network. IBM said the move will help it better focus services around IBM's network computing strategy. Advantis in Schaumburg, Ill., was originally a joint venture between the two companies to offer network and telecommunications services.

DB/Expo unveilings

Oracle Corp. will introduce a Windows NT version of its Oracle Parallel Server database at DB/Expo '97 this week in San Francisco. The software will be compatible with Microsoft Corp.'s Wolfpack clustering specifications for automatic fail-over between two NT servers. Also scheduled: Informix Software, Inc. will release its MetaCube online analytical processing software; Objectivity, Inc. in Mountain View, Calif., will announce Version 5.0 of its Objectivity/DB object database; and New York-based Information Builders, Inc. will unveil Version 2.0 of its Fusion multidimensional database (see related story above).

Microsoft buys Dimension X

Microsoft last week bought San Francisco-based Dimension X, Inc. to beef up its multimedia Java technology. Microsoft will bundle Dimension X's Liquid Motion and Liquid Reality development products into its own DirectX multimedia tool set and also use the technology in future versions of Internet Explorer. Terms of the deal weren't disclosed.

HP Unix servers scale up

Hewlett-Packard Co. this month will announce high-end Unix servers capable of scaling up to 32 processors. HP's V-class systems, seen as a response to Sun Microsystems, Inc.'s mainframe-class servers, will debut May 22. They will support HP's PA-8200 chip. HP will also introduce the 8200 chip into its K-class mid-range servers and extend scalability of these systems from four processors to six.

Get an MBA, study says

A majority of 1,400 chief information officers surveyed recommended that information technology workers seek an advanced degree in business rather than computer science, according to a new survey by RHI Consulting in Menlo Park, Calif. Forty-seven percent said it would be more valuable for an IT professional to pursue an advanced degree in business administration; 41% said computer science was more important; 8% said engineering. Companies "want more business acumen, balanced with technical skills," said Greg Sciepi, RHI's executive director.

SHORT TAKES Three leaders from AT&T's troubled wireless-service unit resigned last week to join their former boss, Craig McCaw, in a competing local telephone service company. Among the departures was Steven Hooper, president of AT&T Wireless. ... Borland International, Inc. made Version 3 of its popular Delphi development tool available last week with features that include ActiveX control creation. It costs $99.95 for an upgrade and $799 for new users. . . . Novell, Inc. in June will ship GroupWise 5.2, an upgrade of its messaging and groupware server to support Post Office Protocol, Lightweight Directory Access Protocol and Internet Mail Access Protocol, which gives users more flexibility to check electronic mail from the road.

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MICRO FOCUS

Transforming The Enterprise

NT scalability still an issue

▸ *Unix vendors to demonstrate support for migration*

By Jaikumar Vijayan

MICROSOFT CORP. is getting help from Unix system vendors in pitching its Windows NT scalability story to users — but it may not be enough. Year-end delivery dates and some lingering issues will likely combine to forestall any serious migrations for a year or two.

Next week, Digital Equipment Corp., Hewlett-Packard Co., NCR Corp. and Tandem Computers, Inc. will demonstrate highly scalable NT applications that run on hardware, software and management technologies migrated off Unix platforms.

Tandem this week will also announce that the Nasdaq Stock Exchange and Dayton Hudson Corp. are eventually planning to move mission-critical applications off Unix servers to Windows NT.

Dayton Hudson is the Minneapolis-based parent of megaretailers Target and Marshall Field's.

The demonstrations will take place May 20 in New York as part of Microsoft's Scalability Day. Questions regarding the reliability of NT and its ability to scale beyond four processors have worried corporations for some time [CW, April 21].

But a closer look reveals that those testimonials and demonstrations are tempered, because most of the products won't be available before year's end.

Nasdaq, for instance, appears to be taking a cautious approach to NT because of issues such as a lack of fault tolerance.

"Right now, we estimate that it could take up to two years for NT to be fully fault-tolerant."
– Jon Hickey, Nasdaq

For example, the pace at which Nasdaq will implement NT depends entirely on how fast companies such as Tandem are able to bulletproof the operating system, said Jon Hickey, executive vice president of technology at Nasdaq's data center in Trumbull, Conn.

"Right now, we estimate that it could take up to two years for NT to be fully fault-tolerant. But we are hoping it happens a lot sooner," Hickey said.

Dayton Hudson officials couldn't be reached for comment.

COMPATIBILITY ISSUES

The differing approaches by vendors to achieve scalability could create compatibility issues for users.

"I think there is going to be a period of time before people actually start moving over their enterprise applications to NT," said David Krauthamer, manager of MIS at Parker Hannifin Corp. in Rohnert Park, Calif.

Next week's demonstrations include the following:

- A SQL server-based modeling and scientific application from Digital that runs on a 12-processor TurboLaser 8400 platform that features support for up to 28G bytes of Very Large Memory. The TurboLaser is Digital's highest-end Unix/OpenVMS platform, and this is the first demonstration of NT on it.
- A decision-support retail database application from Tandem that runs on a NonStop SQL server database running on 16 clustered NT servers.
- NCR will demonstrate a data mining application based on an integrated SQL Server/Teradata database and NCR's TopEnd middleware running on its WorldMark 4300 servers. Teradata is NCR's proprietary Unix database. □

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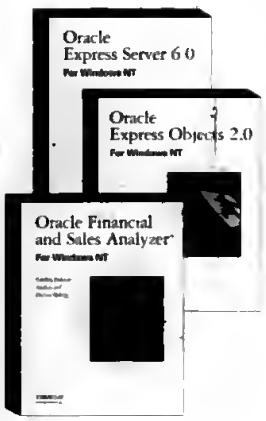
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IBM will roll out flexible middleware

By Sharon Gaudin and Tim Ouellette

SWISS BANK is preparing to replace a 25-year-old homegrown system in one of its largest divisions. But "out with the old and in with the new" isn't a simple process when you are one of the largest banks in the world.

To avoid costly customer service snafus, Jens Hanker, senior vice president of Basel, Switzerland-based Swiss Bank, is faced with running two systems until he is sure the new system is stable and secure enough to run alone — possibly for two years.

To manage two systems running simultaneously, Hanker said he will try IBM's new middleware technology, Component Broker. He said he hopes the technology will seamlessly connect the bank's front end to both systems and route several million transactions per day to the appropriate databases.

Hanker is trying to get PCs to connect with a mix of IBM MVS mainframes and Microsoft Corp. Windows NT servers running databases from Oracle Corp., Sybase, Inc. and IBM.

"We need something in the middle, telling us that we can find the answer to this question on this system and that answer on that system," said Hanker, who will beta-test the technology this summer. "We can't have an interruption in customer service for one day, forget two years. ... Hopefully, this will take away some of the risk."

IBM will announce the middleware, which mixes high-end data messaging with object technology, at its Technical Interchange conference this week in St. Louis, *Computerworld* has learned. Users said they hope Component Broker can answer many of their needs in a world of increasingly complex transactions and applications. But they also worry that any benefits could be thwarted if the product is too unwieldy.

"This could be pretty helpful, but when products get too big and fancy with IBM, I get nervous," said David Bowser, distributed information architect at Columbus, Ind.-based Cummins Engine Co. "All these functions are needed. I just hope they make it easy to use. [Distributed System Object Model] and OpenDoc were great but just too much, too complex. They weren't even usable."

What makes this middleware different from others is that it is supposed to be flexible enough to handle all types of applications, such as mainframe, two-tier, three-tier, object-oriented or Internet. Companies with this complex mix of application architectures will be able to manage them from a central point.

A tool kit is expected to enable application developers to simply indicate what features they want and automatically generate the needed code.

It is possible to do this now, but it is difficult, time-consuming and expensive, said Karen Boucher, director of The Standish Group International, Inc. in Dennis, Mass. This tool should make what was once a surgical procedure relatively painless.

The head of information technology at one of the country's largest banks, who requested anonymity, said he is eager to check out both Component Broker products, but he is also concerned about their complexity.

"If it works, it would make it easier and cheaper, and all of those things are like Mom and apple pie to us," he said. "But I want to know how hard it's going to be to use."

Component Broker Connector and Component Broker Toolkit are slated to be available in September on Windows NT and IBM's AIX. They are expected to be available on OS/2 by year's end and on Sun Microsystems, Inc.'s Solaris and IBM's OS/390 and OS/400 sometime next year. □

IBM's new middleware technology includes:

Component Broker Connector - Software that sits between clients and back-end and legacy servers, shuttling requests among systems and databases

Component Broker Toolkit - Turns legacy applications into components so pieces can be culled from existing applications to build new ones

HMO gets new 'image'

CONTINUED FROM PAGE 1

It was Beacon's savvy chief financial officer, Frank Young, who put the HMO on the right track. His document-imaging system has just about paid for itself after nine months.



"Giving the imaging application to three [workers] means that I do not have to hire a fourth [worker]," Young said. He estimated that he has already avoided hiring five people — a savings of $150,000.

"We expected that eliminating paper would make our workers 10% more productive, but I think it's more on the order of 30% to 50%," Young said.

The document-imaging system has helped to make those savings possible, partly by helping the Coral Gables, Fla., HMO pay its bills in an estimated eight days. That is an unheard of turnaround compared with competitors' 45-day cycles. As a result, physicians, drug companies and hospitals are lined up to do business with Beacon, knowing they will be paid fast.

The imaging-driven application process lets customers apply for insurance on, for example, April 29 and be covered by May 1. That feature has drawn more than 6,000 members to the HMO since it was established last September, Young said. And the HMO exceeded its own goal of 3,800 members.

Conversely, most of Beacon's larger competitors stop accepting applications on the 20th of each month. Customers who apply after that date must wait more than a month for coverage. Beacon's ability to instantly insure members is a big draw for families with young children who don't want to wait for coverage, Young explained.

QUICK SERVICE

Service is another area in which Young thinks his little HMO can. He claimed his rivals aren't progressive in their use of technology, which creates slow service. Beacon's rivals use some automation, but it is more difficult for them to image-enable their applications because they have lots of existing paper, said Scott McCready, an analyst at International Data Corp. in Framingham, Mass.

"We've got speedier data entry and less chance for loss of data or mistakes [with the document-imaging system]," Young said. At Beacon, documents are scanned, stored on servers and manipulated on PCs. Once scanned, the documents are available for retrieval or electronic payment.

Document imaging by smaller companies is a trend in the health care and other paper-intensive industries, McCready said. "It used to be that only the largest claims-processing environments used [document] imaging," he said. But in the past year, companies of all sizes have realized they waste too much time shuffling paper, McCready said. And document imaging has become more accessible because of a breadth of products for PC-based LANs, he said.

Indeed, Beacon was able to automate its claims and application system for about $85,000.

Andrew Lassak, an analyst at Joseph Charles & Associates, a brokerage in Boca Raton, Fla., said Beacon has taken advantage of the fact that residents in the largely Latin-American communities of Miami prefer to do business with a small company.

But the real test for the HMO will be how it's doing after its first full year of business, Lassak said. "It's great to have technology on your side, but technology alone won't get you through if 50 HMO members [have] a catastrophic illness," he said. □

Button-down IBM loosens up for Java

By Mitch Wagner

IBM HOPES to tell its users this week that it can put on a three-piece suit and manage the enterprise by day and switch to Ray-Bans and rock 'n' roll technology by night.

At its annual Technical Interchange conference in St. Louis, IBM plans to focus on enterprise computing initiatives to tie together host-based systems, client/server systems, PCs and the Internet. The company also will attempt to sell information systems managers on new Java and network computing technologies.

"They know a lot of their customers are big mainframe customers who want to move information to the Internet," said Marc Cohn, senior vice president of IS at Enterprise Rent A Car Co. in St. Louis. "If you want to move from your existing investment into the Internet, the most advanced functionality of the desktop and Java; then that's what IBM supports."

Big Blue also plans to introduce a new version of its OS/2 Warp operating system, code-named Bluebird.

It lets OS/2 run as a server for Network PCs, network computers and dumb terminals by permanently storing all user information on the server and using the client hard disk only for temporary caching information.

JAVA EVERYWHERE

As IBM faces a high-end challenge from Microsoft Corp., observers said a big strength for the company lies in its Java tools and its implementation of Java to run across all its hardware platforms — from mainframes to desktops.

Analyst Judith Hurwitz, president of Hurwitz Group, Inc. in Newton, Mass., said IBM is particularly strong in offering VisualAge, an integrated development environment for Java and other languages such as C++ and Visual Basic, which Microsoft has promised and not delivered.

Larry Hagerty, a senior systems engineer at GTE Data Services, Inc. in Tampa, Fla., said that it makes sense for GTE to buy Java tools from the same vendor that provides enterprise systems. □



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U.S. agency puts new $71M system on ice

▸ *Data errors, slow performance main culprits*

By Sharon Machlis

THE U.S. AGENCY for International Development (AID) last week confirmed that it suspended overseas use of a new computer system plagued by integration snafus, data transmission bottlenecks and response times so slow that critics say employee efficiency suffered.

For now, 39 field sites will go back to using the agency's old system for core accounting services and procurement contracts while problems with the Washington-based computers are ironed out. "We need to get the core functionality established," said Richard McCall, AID's chief of staff.

SLOW WORKER

The New Management System (NMS), budgeted at $71 million, has been under fire since it was deployed last October. The AID inspector general's office criticized NMS for data errors and slow performance. In some cases, users had to spend days trying to process a single transaction, a March 31 report said.

AID developed the system because its old one couldn't properly track foreign-aid spending in various programs. But instead of improving accountability, NMS "increased the agency's vulnerability to fraud and abuse" because it went live before it was ready, according to the inspector general's office.

Agency Administrator J. Brian Atwood defended the decision to deploy the system all at once. He said a phased-in approach would take years while more data "of questionable accuracy" was generated on the old system.

"In the long run, it will save us time and tax dollars," Atwood said at a congressional hearing in March. "I understand the risks, and I believe that our approach will pay off."

The new system can't handle the large amount of data that passes among AID offices, McCall said. The agency must decide whether to boost expensive satellite bandwidth to handle real-time transactions or move to some batch processing.

"I don't think people understood the amount of data that would be transmitted over the system," he said.

Designers also initially failed to grasp the difficulty of integrating legacy accounting systems, he said.

"We thought we had three primary accounting systems," McCall said. But numerous in-field alterations to basic systems over the years meant the agency had closer to 80 different accounting systems. Some of the resulting data didn't import correctly into the new system.

In addition, McCall said, system designers should have stayed focused on core requirements instead of trying to immediately add features that users requested after early tests. For example, some overseas employees wanted to be able to call up data from any foreign site. Although that is an attractive feature, he said, "that taxes the system. You don't really need that now." □

AID New Management System

Budget:	$71 million
Problems:	Lengthy response times, data errors and clogged bandwidth
Goals:	To better track expenditures, facilitate employee teamwork and report AID program results

• SSA hearing garners revamp tips

GAO warns 'net not built for privacy

By Sharon Machlis

IN THE FIRST WEEK of hearings that may shape governmentwide policy on putting sensitive information on the World Wide Web, a federal auditor cautioned that cyberspace is fundamentally insecure.

"The Internet has inherent security risks because of the way it was designed," according to testimony submitted by Joel Willemssen and Keith Rhodes of the U.S. General Accounting Office. It was supposed to survive a nuclear blast that might knock out a large portion of the network, so robustness — not security — was the most important feature, they explained.

Last week's congressional hearings were sparked by a furor over the Social Security Administration's (SSA) decision to make taxpayers' earnings records available on its Web site.

"The Internet has inherent security risks because of the way it was designed." – General Accounting Office

People could see those records and their retirement benefit estimates if they gave their name, address, Social Security number, place of birth and mother's maiden name. Critics charged that such identification information is often readily available, making a person's earnings records easy prey to snoopers.

And because it is easy to remain anonymous over the Internet, it is difficult for security officials to track down those abusing Web records, SSA Inspector General David Williams testified.

SSA site supporters noted that private companies already are successfully conducting banking, stock trades and other sensitive transactions over the Internet. "I believe the SSA did a good job of balancing accessibility of information with adequate security and privacy at a reasonable cost," said Noel Matchett, president of Information Security, Inc., a consulting firm.

Among the ideas suggested to revamp the Social Security benefits page are the following:

- Allow taxpayers to opt out of having their records available on the Web, perhaps by checking a box on their federal income tax forms.
- Use passwords assigned to users by the SSA, initially sent by postal mail.
- At the point that a national digital certificate infrastructure is in place, use one-time crytographic tokens. □

Monitoring tools

CONTINUED FROM PAGE 1

background traffic, the network was moderately busy before users even logged on, Bates said.

Information systems managers and consultants told *Computerworld* they must constantly balance visibility with overhead.

"The push to get more management data is having a backlash," said Theo Forbath, a consultant at Northeast Consulting Resources, Inc. in Boston.

Joe Tabaco, a systems analyst at the National Weather Service, agreed. "We can't afford to let management get in the way of the work," he said.

IS managers said the network management effort becomes too costly when tool-related traffic reaches 5% of utilization, or 1% for WAN links. Tabaco said monitors and managers ate 15% of bandwidth on the National Weather Service backbone.

The weather service network carries satellite images and observational data in files up to hundreds of megabytes every half-hour during fair weather. Managers had to reduce their traffic to assure adequate capacity for more frequent updates during storms, Tabaco said.

In the drive to track performance across networks, the problem is that everything — from PCs to printers — has a monitoring agent. The allure of polling too many devices too often can devour precious bandwidth on the network and within the devices themselves.

"We can do quite a bit of damage to an Ethernet LAN by troubleshooting with three SNMP tools at once and extracting statistics too often," explained Bob Napier, a network engineer at Lockheed Martin Corp.

Napier also said he blocks many local management protocols at routers "so we don't hose the backbone."

Vital routers, a frequent focus of scrutiny, can expend more effort answering status queries from multiple tools than from forwarding packets. Under heavy monitoring, they may even thrash and burn.

Many management tools try to discover what is on a network by examining a routing table, but "reading 30,000 entries in a router connected to the Internet will bring it to its knees," said Lou Steinberg, president of consultancy NetOps Corp.

That happened during the Atlanta Olympic Games, causing congestion when IBM turned on its NetView network manager, according to Steinberg. Similarly, users frequently tie up their Internet service provider's router this way.

WAYS TO COPE

To avoid stressing internetworking gear, vendors are offering separate management processors for their products. And to reduce traffic, new performance monitors pack their requests and results more efficiently than the original SNMP.

But let the buyer beware. "Some vendors are doing a good job, but others are just figuring this out," Forbath said.

At Arizona State University in Tempe, knowledgeable users on campus and at organizations that depend on the school for Internet access now can read network status reports on a World Wide Web page.

"That's for protection, so they don't pick up tools to query for statistics by themselves, adding to the load across the network and on the devices," said Joe Askins, director of data communications at the university.

When possible, managers at Charles Schwab & Co. rely on smart agents that monitor themselves to prevent the need for centralized polling, said Richard Weiss, architect for enterprise management systems at Charles Schwab.

That means turning off SNMP agents in clients and servers, Weiss said, and investing in those offered by such vendors as Tivoli Systems, Inc. But few internetworking vendors offer such SNMP agents for their devices, he said. □

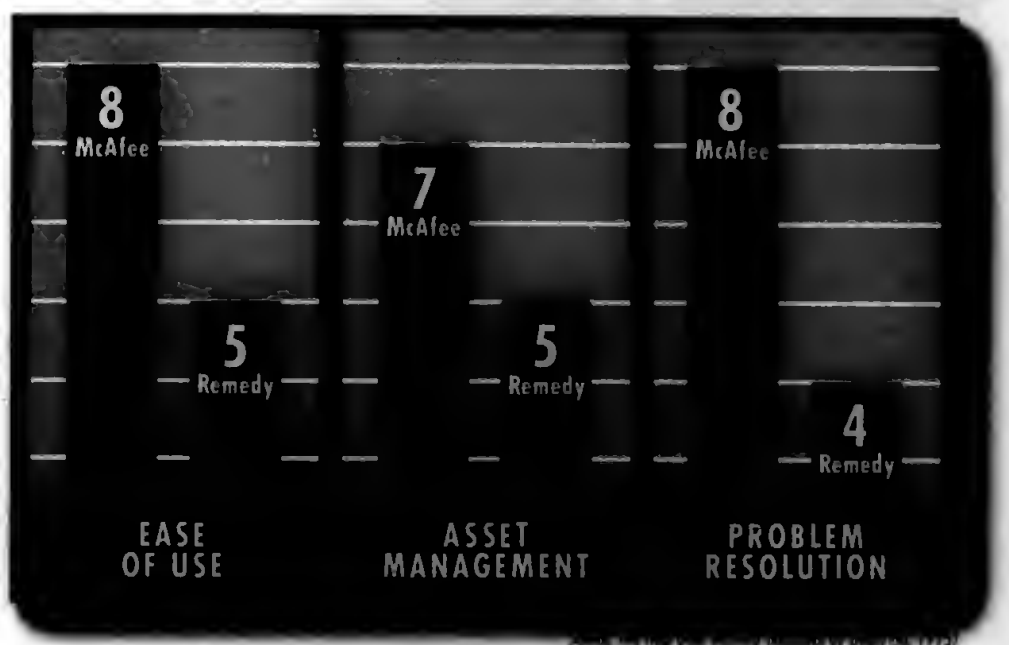
DELICATE BALANCE

How to prevent network management tools from draining performance

- Check default SNMP polling intervals for management information base and Rmon data
- Adopt intelligent agents if possible
- Distribute management to reduce traffic across backbones and WANs
- Limit the number of monitoring tools

& IS managers want performance monitors to ensure network quality. Page 47

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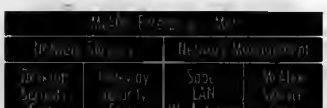
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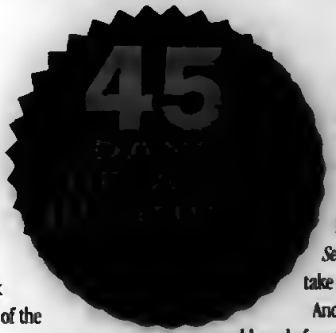
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Cisco, Microsoft to lift Active Directory

By Laura DiDio
LAS VEGAS

THERE WAS NO product, no beta, no demonstration and not even a hint of neon.

Nonetheless, the announcement that Cisco Systems, Inc. will license Microsoft Corp.'s forthcoming Active Directory for Windows NT was the headline act at last week's Networld/Interop '97.

The alliance calls for Cisco and Microsoft to jointly develop extensions to the Active Directory to integrate advanced management of network and intranet services. Officials at the two industry giants also said they will enhance advanced network servers in Windows NT Server. In addition, Cisco will bolster the NT Active Directory to run on selected Unix platforms to extend the directory's capabilities.

Analysts were impressed by the industry weight of the Microsoft/Cisco pairing. They said that if the deliverables match the hype, the two vendors will bridge the Unix and Windows NT platforms and provide users with a unified directory and network security architecture. The pairing would also give businesses a standard mechanism for implementing various directories, including directory services, electronic mail and application directories.

That means that businesses potentially would be able to centrally manage a network based on corporatewide policies without regard to the physical location of users or network resources.

Sixteen users interviewed by *Computerworld* said the Microsoft/Cisco team is compelling,



STEVE ROSE

"The only semblance of a directory that Microsoft has right now is the domain name services"

but they still took a show-me attitude. Users said Microsoft hasn't disclosed when the Active Directory will ship. They also voiced suspicion about Microsoft's and Cisco's lack of experience with Unix and wondered which would be responsible for technical support.

"The only semblance of a directory that Microsoft has right now is the domain name services, and I can't use that to remotely manage my dozens of field offices around the country," said Christopher Crocker, a network engineer at Duke International, Inc. in Danvers, Mass.

Because Microsoft is vague about delivery dates for the Active Directory, Crocker said his food services company is going to stick with Novell, Inc.'s Directory Services technology.

BETA, PLEASE

Dave Devcich, manager of information systems and services at Beveridge & Diamond PC, said his Washington law firm won't consider a product until at least a beta version has shipped.

"Microsoft and Cisco together make a formidable combination," Devcich said. "But I won't bet my business on any product until it's real. Also, Microsoft lately has made a habit of routinely letting delivery dates slip. I'm not going to fall victim to freeze-the-market tactics."

Products resulting from the Microsoft/Cisco announcement won't appear for "at least 12 to 18 months," said Eric Hindin, an analyst at Boston consultancy The Yankee Group. Hindin said that if they deliver, Cisco and Microsoft, which have trounced rivals in their respective markets, could prove indomitable in the intranet and Internet application and services market. □

BAY'S PRODUCT ROAD MAP HIGHLIGHTS

Q3 1997
- Low-end Ethernet and Token Ring workgroup switches with ATM uplinks
- Token Ring switches for System 5000 hub

Q4 1997
- 10M/100M bit/sec. switches for System 5000
- Web-to-SNA gateway intranet package

Q1 1998
- 100M/1G bit/sec. multigigabit Layer 3 routing switch
- Stackable 10M/100M switch with Gigabit Ethernet uplink
- Fast Ethernet and T3 interfaces

Q2 1998
- 100M/1G bit/sec. WAN interfaces
- High-performance WAN concentration

Bay road map paves path to IP-only nets

By Bob Wallace
LAS VEGAS

IT IS TIME for Bay Networks, Inc. to stand and deliver, users and analysts said after the company announced its product road map and strategy as promised at Networld/Interop '97 here last week.

Bay hopes its Adaptive Networking strategy and a cavalcade of switching products promised over the next year will address user concerns that it lacks vision and direction.

In its broad product rollout, the Santa Clara, Calif., company outlined plans for new standalone switches and switching add-ons, enhanced network management systems and routers with double the performance of existing models.

And true to his chip heritage as former second-in-command at Intel Corp., Bay CEO David House showcased an application-specific integrated circuit, which can forward 1.5 million packets per second, as the heart of future switches.

"This is going to be a make-or-break move for Bay," said J. P. Scarisbrick, director of the information technology and services department at Beth Israel Medical Center in New York, a longtime Bay customer. "I think they're headed in the right direction in providing users a path to IP-only networks, while reducing product costs."

"My only concern is the ship dates and whether or not they can make them," Scarisbrick said. "This is a continuing issue [with Bay]."

House said he believes it can be done. He said he has cut 50% of all product development programs since he joined Bay six months ago and has used the engineers on the axed programs to support higher-priority efforts, such as switching.

Two longtime Bay users said they want the vendor to focus some of its efforts on making the many promised products easy to manage. "We're beyond speed now with switching and need an emphasis on making these products as simple to manage as possible," said John Boyd, a vice president at Mode 1 Communications, Inc., a Northeast Utilities, Inc. company in Berlin, Conn.

"Our biggest struggle is in network management because we don't have a lot of staff," said Ken Martig, a systems administrator at Zymogenetics, Inc., a Seattle tester and marketer of pharmaceuticals and a Bay user. "Bay has an incredible network management package in Optivity, but it needs to be able to do more proactive management of our network devices."

John Morency, a principal at The Registry, Inc. in Newton, Mass., agreed that Bay "has got its act together product road map-wise" but said Bay must work on differentiation.

"What is still lacking is an explanation of what is unique about Bay's plan when compared with the strategies of its rivals," he said. □

Cabletron digs into data mines with tools

By Patrick Dryden

THIS SUMMER, Cabletron Systems, Inc. and three partners plan to provide data mining tools so users can dig into their Spectrum databases to find the reasons for network performance quirks and predict network behavior.

Cabletron's Spectrum network management platform already gathers statistics from internetworking devices and other sources in a data warehouse so managers can observe immediate status changes. The new goal is to apply intelligent analysis techniques to that warehouse.

Information systems managers said they hope such capability will help them better comprehend what is happening throughout complex networks and plan for growth.

"We need to manage all the raw data in a disciplined manner," said Bryan Ruhf, manager of the Michigan state government's central network operations center in Lansing.

ROOKIE RELIEF

With a thousand routers to manage, Ruhf said, he needs help planning for traffic growth and predicting the impact on his budget. And because staff turnover is an ongoing problem, "we could train rookies quicker through a big-picture view of network trends," he said.

Rochester, N.H.-based Cabletron previewed the data mining options at Networld/Interop '97 last week, but the vendor doesn't expect to complete beta testing until midsummer.

Cabletron officials said it will integrate data mining tools from GK Intelligent Systems, Inc. in Houston, Syllogic BV in the Netherlands and Thinking Machines Corp. in Bedford, Mass.

Data mining seems like the best way "to figure out why our backbone . performance degrades for no apparent reason," said John Parkinson, director for emerging technologies research at the Ernst & Young Center for Technology Enablement in Irving, Texas.

Data mining is a process of sifting through a large database to reveal cause and effect relationships that may not be evident through normal reporting methods. For example, analyzing Ernst & Young's Spectrum database that way might show one or more possible causes for chaotic traffic flow. □

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23. Dir./Mgr. Sys. Development, Sys. Architecture
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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
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Exchange rollout hits some snags

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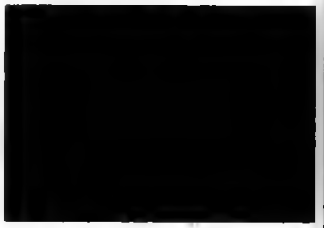
been hampered because installing Exchange has proved more daunting than users had expected. Many users buy licenses in increments as they roll out the product.

"We're falling behind on our projected installation schedule," said Ted Smith, a senior systems analyst at Consolidated Edison Co. in New York, which is migrating 12,000 users from a mainframe-based mail system and Microsoft Mail. ConEd had hoped to move 1,000 mailboxes by the end of last year but ended up moving only about 500.

Exchange users cited several reasons for the holdups, including the following:

- Many users must upgrade hardware on the client and server to support Exchange.
- Because Exchange runs only on Windows NT server, sites must convert their network operating system at the same time.
- The initial version of Exchange lacked Internet hooks.
- Users had scalability concerns.

A large insurance company in New York that is moving about 30,000 users to Exchange is about two months behind schedule, largely because it had to replace its Compaq Computer Corp. 4500 servers with Compaq 5000s.



"We realized after a successful pilot of about 600 users that Exchange needs more powerful servers than we anticipated," said the insurer's messaging manager.

"The level of commitment [to Exchange] is far deeper than the level of rollout," said Tom Austin, an analyst at Gartner Group, Inc. in Stamford, Conn. That is because Microsoft has yet to deliver the level of scalability that is really needed, he said.

"To the small company struggling with 30 post offices, Exchange is like you died and went to heaven. But if you have 100,000 users, you're still waiting for Microsoft to deliver," Austin said.

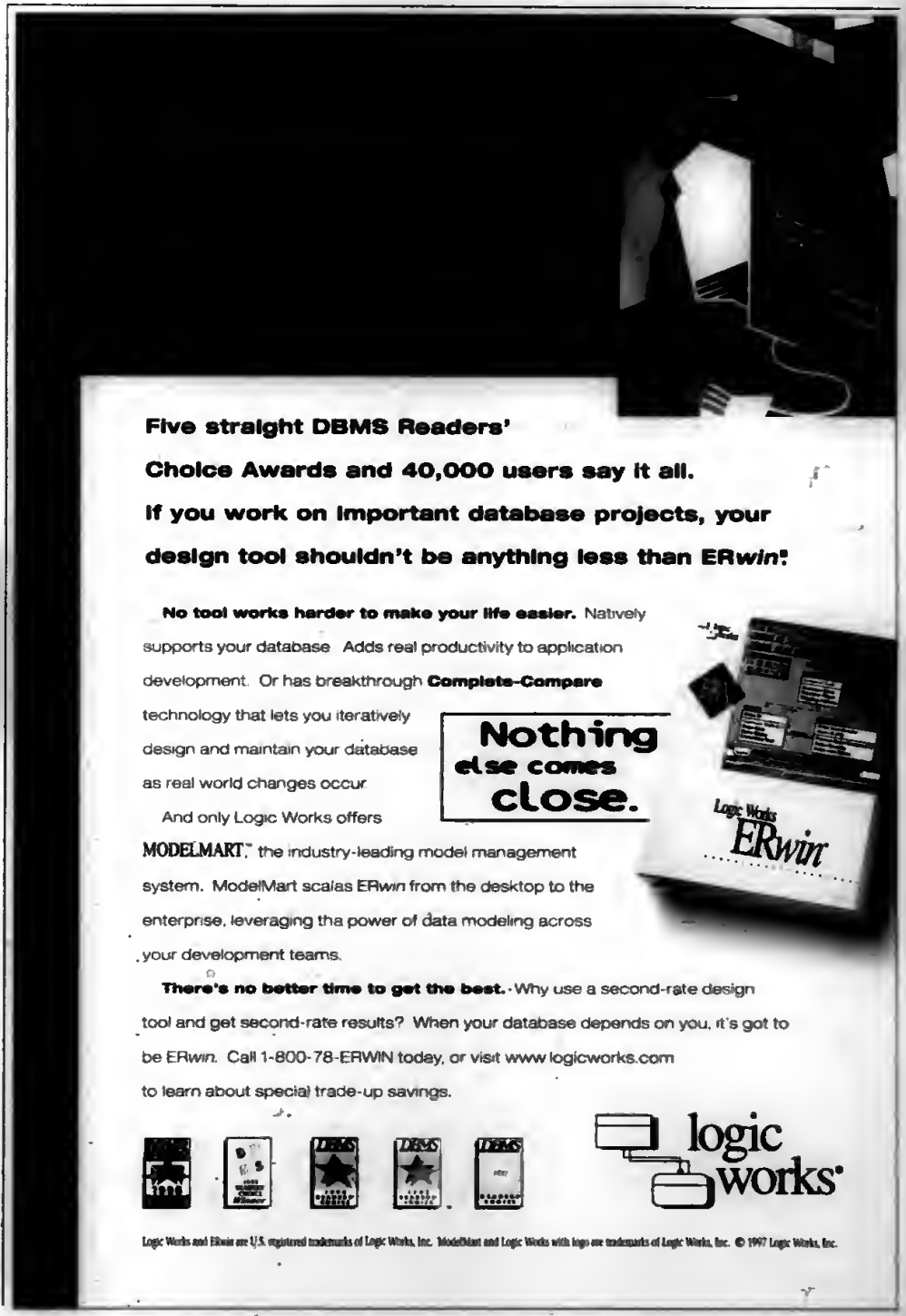
Microsoft officials denied that last year was disappointing for Exchange. "We're very pleased," said David Malcolm, group product manager for Exchange. He said several of the large sites deploying Exchange, including The Boeing Co. in Seattle, have moved more than 20,000 users.

Erik Iversen, director of application development services at Nabisco, Inc. in Parsippany, N.J., said the company completed its 7,600-user Exchange migration last month.

As part of the Exchange Early Adopter program, Nabisco spent a lot of time planning the migration and evaluating the hardware requirements of Exchange, Iversen said. "I suspect that the shops that are having trouble didn't do that level of planning," he said.

Mark Levitt, research director at IDC, said many of the Exchange rollouts that were planned for last year should happen this year. That is because Microsoft has shipped an Internet-capable version of Exchange, and large sites have bulked up their hardware to handle the client/server messaging system, Levitt said. ☐

& Revamped Lotus Domino Directory to track user E-mail addresses. Page 53



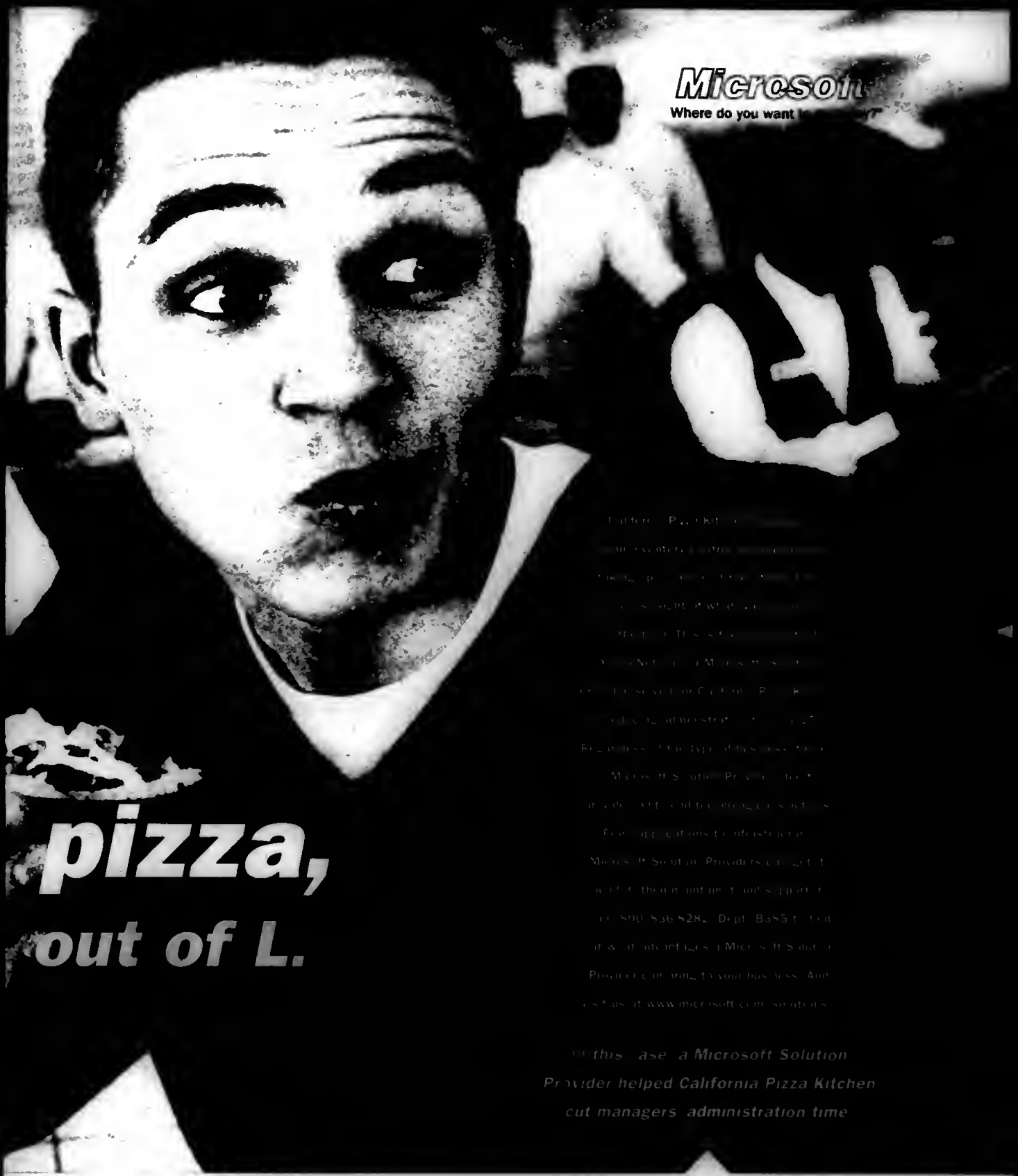


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Health care firm prescribes customer link

By Randy Weston

HEALTH MAINTENANCE organization Trigon Blue Cross Blue Shield is offering customers a window into its internal client/server packaged application system.

The Richmond, Va.-based HMO installed Geac Computer Corp.'s SmartStream Decision Support software for its own purposes and then decided to sell the front-end access module to its group customers. Corporate benefits managers can dig into Trigon's database to track and analyze health trends in their company and take preventive steps.

"Group customers have been requesting an electronic link for a long time," said Kevin Penn, project leader at Trigon. "This solution is not fancy, but it delivers information and gives customers analytical tools to manage their company's benefits."

Trigon has two customers signed up for the analytical software, out of 75 licenses from Geac. The insurer said pricing for the software — called the Customer Information System — ranges from $425 to $750 per month, depending on group size. Trigon officials wouldn't divulge how much money the HMO hopes to make from the project, but they said it hopes to sign on about 15 to 20 customers by the end of the year.

Penn said Trigon expects to generate big savings now that customers will do analytical queries that Trigon used to do.



"This solution is not fancy, but it delivers information"

"The way we did it before is we would send out information annually on a piece of paper," Penn said. "Customers would then call and say, 'Can you split this up 50 million different ways?' I'd have to hire an analyst to split it 50 million ways for the client. Now clients can do that themselves."

A customer can click on a Trigon icon on the desktop to dial in to Trigon's database and access information such as the top 100 drugs prescribed to a company's employees for the year.

The customer can use the Geac analytical tools to drill down and find patterns in the data tables from the past two years. That may mean comparing brand-name vs. generic prescriptions or specific ailments by state, for example.

Southern States Cooperative, Inc. is preparing to do just that. The farming cooperative, also in Richmond, will begin this month to track the health trends of its 3,500 employees in six states.

Southern States is sharing some information with Trigon to get the system up and running, so Trigon is providing the software for free.

"I will be able to break this data down easily by states I operate in and see if, for example, one state has a higher rate of heart problems or more back-injury claims than another," said Jacque Borinski, manager of employee benefits at Southern States.

"It will help us better tell what the needs of employees are," he said. "It will allow us to plan for their care and to tweak our program to not only cure problems but prevent them."

Given that employee sick time at Southern States makes up 1.7% of base pay, which is the national average, Borinski said he hopes the access tool will help find ways to keep employees healthy and productive.

The Trigon system has security features that let customers access only the raw data for their own accounts. No confidential information on specific patients is available, Penn said.

Plans call for Trigon to make the system accessible over the Internet. □

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It's It Changed Your [illegible]

IS pros team with schools to fill skills gap

By Julia King

MOST COLLEGE computer science programs no longer teach Cobol programming. Meanwhile, U.S. businesses can't find enough Cobol professionals.

Companies also need skilled webmasters and Internet experts, yet few colleges offer programs in these areas.

To counter those shortfalls, some colleges are recruiting information systems managers and other business leaders to play a much larger role in designing high-tech academic programs.

In exchange, participating companies gain access to a pool of candidates more likely to meet their particular IS skills requirements. They can therefore reduce the cost of retraining workers.

"It's our job to produce the knowledge workers of the future. But because of the rapid rate of change with information technology, we need business advisory groups to help us devise new curriculum almost continuously," said Neil Evans, director of the Northwest Center for Emerging Technologies (NCET) in Bellevue, Wash. He is a former chief information officer at Microsoft Corp.

The business/academic partnerships are good for both sides, said Steve Fouts, a technical writer in the IS group at Seattle-based Safeco Insurance Company of America. Fouts helped develop the skill standards used at NCET.

"Colleges get their graduates into the workforce, and business gets people coming in the front door who know the right things and can hit the ground running," Fouts said.

In the Northwest, large employers such as The Boeing Co., Weyerhaeuser Co., Microsoft and US West Communications, Inc. have teamed with the region's colleges and universities to establish a set of skill standards for eight IS careers.

Those skills (see chart) are now being incorporated into academic programs at participating two- and four-year colleges, Evans said.

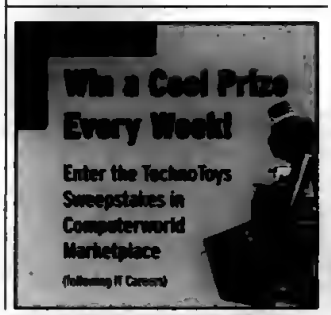
In Omaha, a similar group of business and academic leaders is working to ensure that students' course work matches what local companies need. For example, the group offers a Cobol boot camp to produce a crop of year 2000 project workers after seven months of intensive, full-time training [CW, Jan. 6]. □





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MERRILL LYNCH ***ROI=1,464%***

For this leader in financial services markets, the SAS Data Warehouse yielded fast payback and measurable benefits According to John Crawford, VP of Reporting Systems in the Marketing Systems Group, "We've been using SAS software for all of our solutions in terms of our data warehouse implementation, and our return on investment has only grown...it's a broad-scope, well-integrated solution that provides all of our data warehousing needs from one vendor, and there's no other single vendor out there capable of doing that."

LTV STEEL COMPANY ***ROI=16,995%***

As the third largest steel operator in the U.S , they've been using SAS software for data warehousing since long before the term was coined According to Quality Assurance Senior Analyst Robert Scharl, "SAS software is THE element of our data warehousing solution. It beat everything else for data retrieval...and it would have cost us maybe a half million dollars to bring something else in for a data warehousing system."

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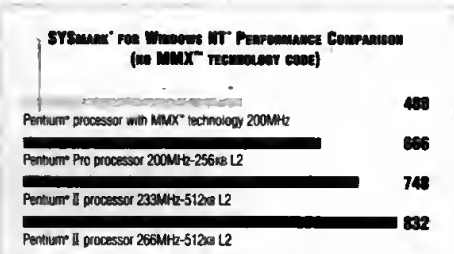
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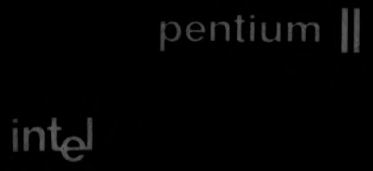


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pentium II
intel

Lotus to shore up support system

▶ *Skyrocketing Notes usage spurs more help calls*

By Barb Cole-Gomolski

LOTUS DEVELOPMENT CORP. is looking to its business partners, parent company IBM and the World Wide Web to help remake its support organization.

Technical support has long been a sore spot for Lotus users, and the company vowed to fix it at Lotusphere 97 in January. It has become an issue particularly for Notes users as the messaging software has spread from departmental use to the enterprise. Notes is now hosting large, mission-critical applications, making zero downtime a requirement, users said.

Better support also could help customers quickly deploy the suite of Web-based software the company is pushing and break users' reliance on costly consultants.

SLIPPING SUPPORT

Dennis Murray, head of corporate technologies for clinical development at Novartis Pharmaceuticals, Inc. in East Hanover, N.J., said Notes support has slipped over the years.

"As Notes started to grow, it seemed like [Lotus] couldn't hold on to good support people," Murray said.

Lotus officials acknowledged that support hasn't kept pace and blamed the skyrocketing number of Notes seats and rising support calls.

There are now more than 11 million Notes users, up from 4 million about a year ago. Lotus officials said support calls are up about 40% this year over last. They said they expect the company to field about 260,000 calls this year.

EMPLOYEE RETENTION

Company officials said they had failed to pour enough money into support and had no career path for outstanding support engineers.

The top performers tended to get recruited away by the customers they helped, but a new program lays out more career opportunities for them.

One consultant at an East Coast chemical company said he frequently seeks help on the Lotus support line from people who appear to know less about Notes than he does.

HOW LOTUS WILL ADD STATURE TO SUPPORT

- Establish emergency customer-response teams
- Develop more Web-based support products
- Lean on business partners to help with support
- Set up competency centers that focus on large-scale environments
- Establish links to IBM's call/problem management system
- Provide a single support contact

Support is particularly lacking when Notes is integrated with large-scale networks, users said. That is common among companies that started out selling PC software and supporting end users on small networks, they said. Indeed, Microsoft Corp. has had to rework its support operations, turning to the Web and third-party integrators to keep pace (CW, April 14).

Jim Krzywicki, vice president of worldwide customer support at Lotus, acknowledged that "we have really felt the pain in the global enterprises." He said Lotus will increase support spending by 50%, but the cost to customers — anywhere from $50,000 to several hundred thousand dollars for top-level support for a large-scale Notes deployment — will remain the same.

Lotus is setting up a system of tiered support, with calls from systems administrators and Notes developers and calls from spreadsheet users channeled to different technicians.

ON-SITE SERVICE

Lotus also will elicit more help from its 15,000 business partners in offering on-site support to customers and will train its own emergency customer-response teams.

Two new competency centers, which will open by year's end, will focus on multivendor enterprise configurations and tweaking source code to fix problems, Lotus officials said.

The plan also calls for a greater reliance on Web-based support, which is becoming increasingly popular. Whereas six months ago, few people turned to the Web with support questions, about 35% of support inquiries now come in via the 'net in Europe, where Lotus is piloting some Web-based support services.

David Marshak, a vice president at research firm Patricia Seybold Group in Boston, said the improvements are necessary and overdue.

Lotus now shares several large customers with IBM, which is known for its high-quality customer service.

In addition, as messaging and Web software become a commodity, the quality of services will differentiate products, Marshak said. "Support will be key in this era of instant applications," he said. □

CIOs wary of offbeat outsourcing financial model

▶ *Lawyer claims firms can make millions*

By Thomas Hoffman

A CONTROVERSIAL economic model for outsourcing that its creator claims could double corporate return on investment is taking a beating from skeptical chief information officers.

The model, floated by John K. Halvey, a prominent New York outsourcing lawyer, would pool billions of dollars from large outsourcing deals into structured finance vehicles such as mortgage-backed securities.

Halvey doesn't have any clients who are executing on this model.

As explained by Halvey, investors — in this case, the companies doing the outsourcing — would get payments from investments in mortgage-backed securities, derivatives and other types of financial vehicles.

Mortgage-backed securities pay investors interest and principal from underlying mortgages. Derivatives are financial instruments whose value is "derived" from an underlying stock or bond.

Under the historical model, an insurance company that spent $50 million per year on information technology might be able to shave $10 million from its annual costs through outsourcing. Much of the savings would stem from data center and staff consolidation.

But under the new model, the same insurer could potentially reap $20 million in investment gains by channeling its payments into a structured financing vehicle, Halvey said.



A $40B outsourcing deal "is a light, and investment bankers are moths."
– John K. Halvey, Milbank, Tweed, Hadley & McCloy

It will take a lot more to convince wary information systems executives. "Why should we invest our money through an outsourcing vendor when we can already do that ourselves? I don't see the business value here," said Charles C. Emery, CIO at Blue Cross/Blue Shield of New Jersey in Newark, which is in the fourth year of a 10-year, $1 billion IT outsourcing deal with IBM.

Emery isn't alone. "I don't think we'd go for a deal that was structured this way," said Tim Ivins, a senior manager responsible for McDonnell Douglas Corp.'s 10-year, $3 billion outsourcing pact with IBM. "It looks like the risks outweigh the benefits."

Indeed, most critics described the model as having limited value to outsourcing customers, many of whose companies can afford to make these investments directly with an investment bank and don't need outside intervention from vendors.

"Big, sophisticated customers already have access to credit markets — I don't think they'll go for this," said William B. Bierce, a principal attorney at Bierce & Kenerson P.C. in New York who has represented outsourcing customers such as CoBank in Denver.

"IBM's not in the business of investing in asset-backed securities," said R. Gregg Nabhan, executive director of equity capital at S. G. Warburg & Co. in New York.

Even outsourcers are perplexed. "Why would customers turn to an outsourcer [for those kinds of investments]?" asked John Harris, vice president of marketing at Electronic Data Systems Corp. in Plano, Texas. "That's a very separate investment decision that the client should make."

BIG RETURNS

But Halvey said he believes that if customers are willing to give up some rights — such as the first two years of termination rights or "most-favored customer status" with its outsourcing vendor — a structured finance deal with the proper insurance protection potentially could deliver significantly higher returns than the old model. Vendors, he said, would still be required to meet monthly performance levels, and customers could continue to pay on a monthly, quarterly or semiannual basis.

Vendors such as EDS would bundle multiple customers into these so-called "trust" vehicles and direct big chunks of their monthly service fees to investment banks such as Goldman, Sachs & Co. in New York, Halvey added.

Critics such as Bierce say the model is flawed for several reasons. If one outsourcing customer goes bankrupt, the other partners face negative exposure and bad publicity and run the risk of damaging their companies' credit ratings. □



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Briefs

Start-up bets on wireless

By Robert L. Scheier

FIRST, THERE WERE wireless LANs. Then came thin clients. Is the world now waiting for a wireless thin client?

The backers of Cruise Technologies, Inc. are betting $12 million that it is. Cruise, a three-month-old start-up in Arlington Heights, Ill., is promoting a new generation of wireless touch-pad devices that could give cost-effective data access to workers who don't have a desk to call their own.

THIN CLIENTS

Among the workers who could benefit from such devices, its supporters said, are nurses who enter patient data; automotive mechanics who look up part numbers or repair procedures; and warehouse workers who enter inventory information.

Unlike most conventional notebook or handheld computers, wireless thin client devices don't run an application or store data, said S. Christopher Gladwin, president and CEO of Cruise. Instead, they merely display the graphical user interface portion of an application that is running on a nearby Windows NT Server system. More than 60 thin clients can be linked to the server via Proxim, Inc. RangeLAN2 2.4-GHz radio beam. Wireless thin clients could deliver several business advantages. The first is cost: The initial purchase price of a color wireless thin client — about $2,700 — may approach that of a notebook computer, but the total cost of ownership will be lower, said Scott Merkle, Cruise's marketing vice president. Information systems managers would only need to change the application on the server, rather than install new software on each notebook PC, he says.

Cruise has a strong position in the niche market of workers who need information but can't be tied to a desk, said Brian Murphy, director of client/server research at The Yankee Group in Boston.

The 22-person firm was spun off from the Mobile Systems Group of Zenith Data Systems and is backed by two venture capital firms and Packard Bell NEC, Zenith's owner, which owns a minority stake. □

Wireless thin clients



Processor: Intel X86-compatible
Weight: 3 lbs.
User interface: Windows 3.x and higher
ROM: 1M byte
RAM: 1M byte

Borland says Microsoft raided staff

By Wylie Wong

BORLAND INTERNATIONAL, Inc., sued Microsoft Corp. last week, charging that the industry giant is trying put the toolmaker out of business by hiring away its top employees.

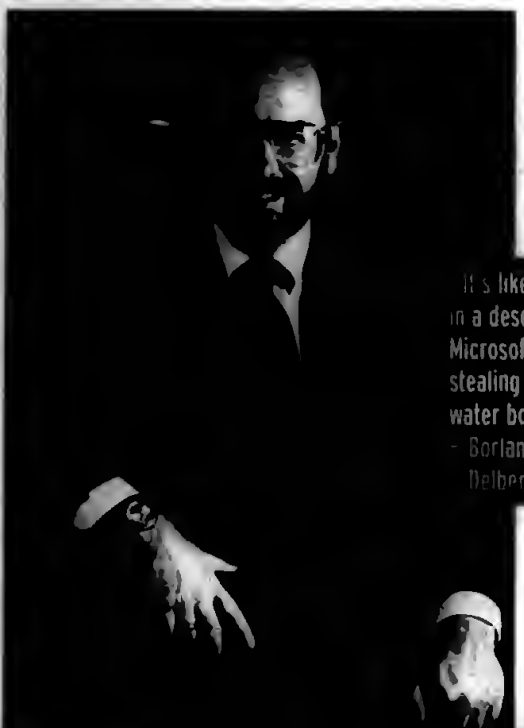
In its lawsuit, Borland alleges that Microsoft, its main competitor in the development tools market, has lured away 34 key software architects, engineers and marketing managers to acquire confidential technology information and hurt Borland's chances to recover from its financial woes.

As filed in state Superior Court in Santa Clara County, Calif., the suit also charges Microsoft with unfair competition. Borland, in Scotts Valley, Calif., seeks unspecified damages and an injunction to stop Microsoft from targeting its employees. No former Borland employees are named in the lawsuit.

"I just want Microsoft to leave us alone," said Borland CEO Delbert Yocam. "It's like you're in a desert and Microsoft is stealing your water bottle."

He said Microsoft lured away Borland employees with hefty signing bonuses, and recruited them by sending limousines to Borland headquarters and taking them out to lunch.

Borland laid off 300 of its 1,100 employees earlier this year to cut costs. A Microsoft spokesman said Borland's claim was without merit. □



WORKSTATIONS

SGI shakeup aims to get products rolled out faster

By Jaikumar Vijayan

SILICON GRAPHICS, INC.'S (SGI) sweeping reorganization last week could ease some of the product availability and other short-term issues that have plagued the company recently.

But SGI, in Mountain View, Calif., still faces challenges from Windows NT workstations at the low end and an aggressive Sun Microsystems, Inc. at the high end of the technical computing market, observers said.

The most significant part of SGI's revamp was the melding of its primary product lines, engineering units and manufacturing into one Computer Systems Organization to design and build all SGI workstation and server products. The consolidation could resolve problems SGI has faced in getting products out the door.

"It is unclear yet how this new structure will help," said Greg Weiss, an analyst at D. H. Brown & Associates in Port Chester, N.Y. "But at least it shows that SGI understands how important it is to take care of issues like these."

SGI has lost money in three of the past four quarters. The company's stock, which hovered at around $28 as recently as January, dropped to less than $13 early last week before it climbed to $15 by the weekend. □

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OPINION

Plugged out It's midnight, and here I am, telecommuting again. How '90s. How chic.

I don't even have to worry about being labeled as a workaholic, which in the '80s was what we called those poor dysfunctional fools who were still working when they should have been sleeping.

But alas, technology is failing me. I can't connect to my office system because the server unceremoniously kicked me off. So I'm rooting around locally in WordPad, trying desperately to remember whether this file will transfer without major surgery once I can connect again.



Welcome to the dark side of telecommuting, where technology giveth and it taketh away.

Slow access times and cranky connections are maddening to millions of us on a daily basis. The much-heralded telecommunications pipelines — such as cable modems, Integrated Services Digital Network and Asymmetric Digital Subscriber Line (a.k.a. ISDN on steroids) — continue to tantalize us while we slog away on 28.8K bit/sec. dial-up modems.

Even more ironic, a lot of the so-called work time we're spending remotely is frittered away trying to get all the technology pieces to work. Market analysts at Infonetics Research project that "downtime" by remote users will amount to nearly $4 million in lost productivity this year.

So it was with an empathetic heart that I read about the 140 sales representatives at Nestle USA, who are actually required to telecommute as a cost-saving strategy ["Remote users fight to dial in," CW, May 5]. As their frustrated help desk manager so aptly put it: "I'd like to talk to the happy remote user."

Oh, *that* user. That must be the one with access to reliable phone lines, a stable communications server and foolproof remote access software.

That lucky stiff is getting a lot of work done. Probably got to bed way before midnight, too.



Maryfran Johnson, *executive editor*
Internet: *maryfran_johnson@cw.com*



LETTERS

Cost savings in paper-free office may be exaggerated

I MUST COMMENT on your story regarding the enormous savings Owens Corning expects to gain by eliminating paper ["People who work at (fiber)glass company shouldn't use paper," CW, April 21].

The article does a nice job describing how Owens Corning will take advantage of technology to reach its goals but fails to mention the cost of the technology.

How much did it cost to build the intranet, purchase scanners and standardize PCs on the hardware and software side?

How many routers, hubs and switches were added to the network, and at what cost?

How many positions were added to the technical staff to support the growing technologies that are in place?

How much did it cost to build the intranet?

As far as the file cabinets and the calculation used for determining the savings, I disagree.

Typically, filing cabinets are used as hallway liners or on the back of cubicles — in other words, in dead space.

Removing the cabinets will not necessarily mean the company will be able to reuse the space previously occupied by the cabinets.

While I agree with the "paper-free" environment and with letting technology work toward that goal, I would not expect Owens Corning to gain the savings the article suggests.

Greg Thompson
Information services manager
Network Communications, Inc.
Lawrenceville, Ga.
gthompson@treb.com

Building a network computer doesn't have to be so difficult

THE IN DEPTH ARTICLE in your March 10 issue, "Charlie builds a network computer," left me disappointed.

I'm a student network administrator at Homestead High School in Cupertino, Calif.

I frequently build network computers, and it's not as hard as Charles Babcock makes it out to be.

Attempting to load a freeware operating system (especially Linux) on a computer and configure it is not something I would recommend unless you have a good book or a Unix guru to help. Linux is not a very practical end-user operating system unless it has been preconfigured for use on the specific computer.



Had Babcock spent his two weeks in Homestead's computer lab, his project would have been more impressive.

Making "something out of nothing" is something we do at our high school every day.

Cory Hamma
Sunnyvale, Calif.
cdhamma@
hhs.fuhsd.org

HP embraces Unix and NT

WE APPRECIATE the comprehensive coverage of Hewlett-Packard Co. in the In Depth corporate profile on our company ["Parallel parking a battleship" CW, April 28]. However, there was one sentence referring to our customers' responses to a question in a recent *Computerworld* survey that was not put in the proper context and may cause some confusion.

HP is aggressively investing in Unix and has no "plans to migrate users" to NT.

The question referred to whether customers were aware of HP's plans to help them move from our Unix or MPE platforms to our NT platform.

HP embraces both Unix and NT, and we are helping customers who want to integrate those platforms in their environments.

Many customers who use our longtime platform, the HP 3000, also want to have an integrated environment. I hope this clears up any confusion.

Rick Belluzzo
Executive vice president and general manager,
Hewlett-Packard Co.
Cupertino, Calif.

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

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13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
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70. Medical, Legal, Accounting Mgt.

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90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
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(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No
Internet Products ❒ Yes ❒ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
(a) ❒ Internet software
(b) ❒ Internet browsers
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(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No
Internet Products ❒ Yes ❒ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
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(b) ❒ Internet browsers
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Exploring the dark side of telecommuting

Hope Lewis

Cheerleaders for telecommuting paint the process as a panacea that can make work life more flexible and workers more efficient, while easing the pressures that work and family can put on dual-career marriages. But as an experienced telecommuter, my advice to the exuberant is buyer beware.

A few years ago, I was offered the chance to work from home as part of a company pilot program. The program was designed for part-time employees only. But I had just returned from a minimal maternity leave after the birth of my second child, and I was ambivalent about returning to work full time anyway.



Telecommuting sounded ideal, despite the cut in pay. I moved from the corporate suburban park, business attire and social environment of colleagues and friends to the isolation of my basement office.

As a telecommuter, I lost my sense of importance as an employee.

After six months, my manager — a visionary who promoted telecommuting — moved to a new position.

My new manager grudgingly accepted my unique designation in the department but paid little attention to me. He wanted to see people frequently and wanted to be able to hand out impromptu assignments, rather than make contact through electronic mail or voice mail. I was required to attend meetings, but I often had to leave abruptly to tend to my family. Obviously, even though I was a part-timer, I wasn't going the extra mile like some of my colleagues. That posed a liability. Meanwhile, the company was going through financial difficulties and restructuring. People were being encouraged to take early retirement, generous severance packages or different positions at lower salaries. Those in the office were privy to information about where the good jobs were and what departments might be eliminated. They could make a case for themselves in person. I had to actively solicit information from colleagues in the office, which put me at a disadvantage.

My increasing isolation admittedly caused me to lose motivation, and it showed in my work.

As the only telecommuter in the department, I was a pioneer — a role I didn't desire. My marketing communications work involves developing ideas collaboratively with colleagues. Being isolated at home in front of a computer wasn't conducive to this process.

At the end of the three-year pilot program, I had to decide whether to go back to work full time or take a severance package. My managers pushed me to take the package, and I didn't resist. As a telecommuter, I lost my sense of importance as an employee and knew it was time to move on.

Telecommuting brought many positives to my life, but it also taught me several things you need to think about if you're considering a telecommuting position or if you manage remote workers.

First, are you using it simply for convenience — to be more available to your family at home? It's important that the barriers between work and family stay intact, so simply trying to merge them could lead to failure.

Second, do you like company and the hubbub of a traditional work environment? Does your work require impromptu feedback? If so, telecommuting will only work some of the time.

Finally, do you hope to be promoted, manage people or gain higher levels of prestige? If so, talk to your manager and see if telecommuting puts those ambitions at risk. Telecommuting can make life more flexible. But like all solutions, it has a dark side. □

Lewis is a freelance writer living in Connecticut. Her Internet address is hopel@mdlewis.com.

Bull riding at the E-mail rodeo

John Gantz

Yee-ha! The rodeo has begun. The major E-mail vendors are populating the planet with client software at an alarming rate. You want E-mail? You can get it free on the Internet, free with Windows 95, free with Microsoft Office 97, free when you buy an Internet server, free when you buy a corporate E-mail server, free with America Online. Soon you'll be able to get free E-mail software when you gas up your car or use your ATM card. Of course, what you are getting free are E-mail clients. Having access to a post office is something else.

At first, when Mark Levitt, our E-mail market expert here at International Data Corp. (IDC), brought me up to date on the vendor activities in the E-mail market, I thought it was a Microsoft conspiracy — but that's my first reaction to almost any news.

The Redmond, Wash., cowboys offer customers a confusing array of E-mail choices — Microsoft Mail, Exchange, Windows Messaging, Outlook, Outlook Express (formerly Internet Mail) and probably some other stuff I forgot. But then I checked the IBM/Lotus lineup and found CC:Mail, Notes, Notes Mail, Notes Desktop, OfficeVision, Lotus Mail and Lotus Mail Java Edition. That's when I decided this wasn't a conspiracy, but a rodeo.

GROWING LIKE WEEDS

But for IS professionals, it may be more like a demolition derby. What's happening is that E-mail clients are proliferating on desktops like kudzu. A lot of them — most of them — are simply sitting on hard drives taking up space. But in some cases users are starting to use multiple clients to access multiple E-mail systems, often without the knowledge of their corporate E-mail administrators. This is like in the early days when PCs flooded in to businesses.

Free E-mail software makes sense if it can help sell post offices — servers — which is where the money is. Own a company's post office and you own the company.

As users start to demand interoperability among their E-mail clients, the only solutions available are based on Post Office Protocol-3, which offers less functionality than today's proprietary systems. "I think a lot of administrators understand the issue and would like to stem this tide of client software until the open server technology is ready," Levitt says. "But I'm not sure the end users or vendors will let them."



IS departments will have to support heterogeneous E-mail clients in a way they never had to before.

So I don't see any way around the fact that IS departments will be called upon to support heterogeneous E-mail clients in a way they never had to before, and sooner rather than later. And that the tools to do so will lag demand.

Certainly, standards being incorporated into the server products, such as Lightweight Directory Access Protocol and Internet Mail Access Protocol-4, will help, but those won't be universally available until everybody has a server upgrade. And that won't happen as fast as new E-mail clients hit desktops.

Standards will make it easier for users to communicate across E-mail systems, but they won't help administrators who are trying to keep up with moves and changes, user passwords, and so on. (We'll talk about directory synchronization some other time.)

As I say, it's a rodeo. And guess who's riding the Brahma bulls? If you have any comments feel free to E-mail me at my Internet address. Or my CC:Mail address. Or via Notes, AOL, Geocities. . . . □

Gantz is senior vice president at IDC in Framingham, Mass. His Internet address is jgantz@idcresearch.com.



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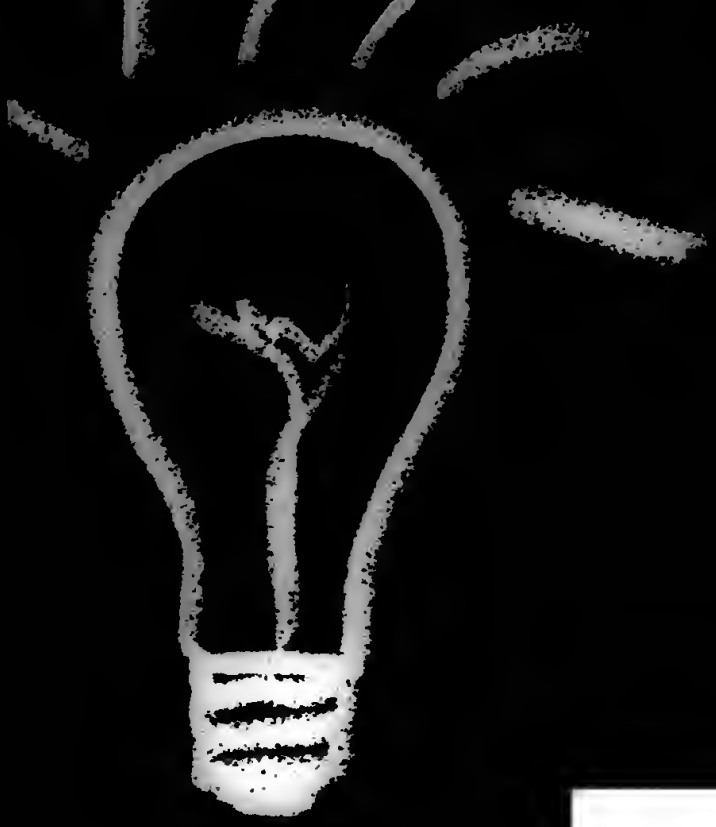
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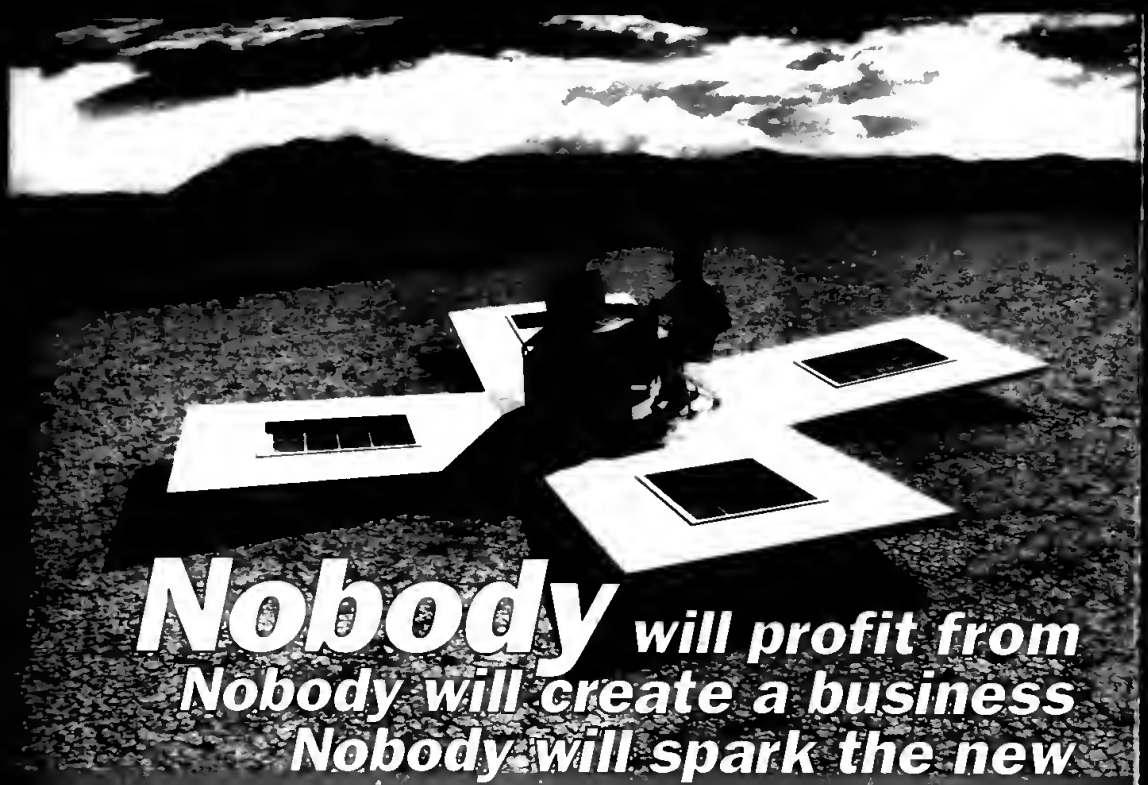


Sixth Annual
Windows World Open
at Windows World '97

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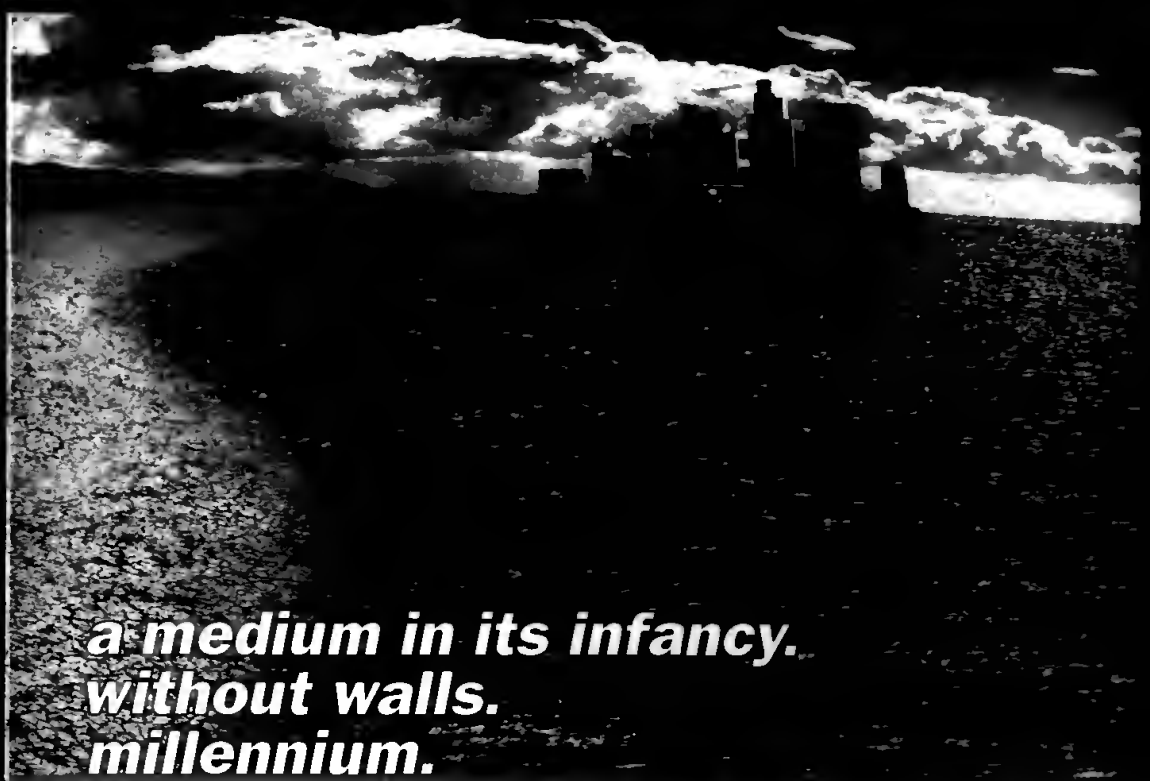
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without walls.
millennium.
(Until somebody has the tools to make it happen.)

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When Microsoft developed Windows, we had the vision that it would empower people to use computers with greater ease and effectiveness. We also hoped that it would provide the means for organizations to build better solutions in less time. The Windows World Open is a rare opportunity to discover and celebrate the outstanding custom development that has helped achieve these goals.

Having evolved from the back office to include the front lines, computing now plays a critical role in basic business processes such as sales, customer support, employee information and core business systems. The Windows World Open offers insight into how organizations are using Windows technology in strategic ways to address business issues.

This year, every finalist selected Windows 95 or Windows NT for their application, providing over 130,000 users with the means to do their jobs more efficiently. These applications employ 101 different third-party tools, demonstrating the breadth of choice in the Windows environment. Reflecting growing interest in the Internet as a business tool, six finalists use the Internet as a component of their solution.

Many finalists created their applications by working with third-party developers such as consultants or system integrators. Although this contest honors the owners of the solution, I can't stress enough the key role third-party developers play in custom applications. Over half of the finalists in this year's contest were supported by the work of third-party developers.

Over the past six years, the Windows World Open has brought together some of the brightest and most creative people developing Windows applications. This year's entries illustrate the depth and richness of solutions offered on Windows, and the abstracts that follow offer a glimpse into these innovative applications. Be sure to check out the finalists in the Windows World Open booth the week of June 2, and stay tuned for the selection of winners.

Bill Gates



COMPUTERWORLD

Gary Beach
Senior Vice President
International Data Group
Computerworld Global
Support Center

Congratulations to the finalists in the Sixth Annual Windows World Open. Each year the applications submitted to us reach new levels of quality and ingenuity. The 1997 finalists continue that trend with innovation, technical excellence and a commitment to producing rich applications that improve productivity and lower cost of ownership. Developing these solutions has required the collaborative effort of in-house and third-party developers and use of the wide selection of tools and technologies available to them. Computerworld is proud to support the Windows World Open and provide an opportunity for others to see these solutions in person and to meet the talented developers who produced them.



SOFTBANK COMDEX.

Jason E. Chudnofsky
CEO/President
SOFTBANK COMDEX Inc.

SOFTBANK COMDEX is proud to host the Windows World Open for the sixth year. This unique contest was designed to showcase the world's best custom applications and we are pleased that Windows World provides an exclusive forum for these exciting entries.

Congratulations to all the finalists for their excellent work. And thanks to founding sponsors Computerworld and Microsoft, and sponsor Wall Data, whose dedication and resources make this program possible.

We encourage you to visit the Windows World Open booth to get a first-hand look at this year's finalists. And be sure to attend the Awards Program on Tuesday, June 3rd during Bill Gates' keynote presentation, when he will announce and present trophies to the winners.

WINDOWS WORLD Open

Sixth Annual Windows World Open

The Windows World Open is an international competition that awards developers and their companies for innovative custom application work on the Microsoft® Windows® platform. By putting leading-edge tools and technologies to work and leveraging the capabilities of the Windows environment, these solutions are meeting business challenges, improving efficiency and resolving real-world problems and issues.

The Windows World Open also applauds third-party solution providers and recognizes the key role they play in advancing many of the showcased applications. Support from solution providers as well as the use of a wide variety of development tools give these applications a high degree of integration and refinement.

The 1997 finalists demonstrate their applications in the Windows World Open booth on the show floor. This exhibition is a unique opportunity for people from a variety of backgrounds to see firsthand how innovative technology is being used by different businesses and organizations. Finalists come from companies of all sizes and types and from all around the world.

All finalists' entries are custom applications (not for resale) developed for Windows 95 or Windows NT™ platforms. Entries were submitted on or before the contest deadline which was February 10, 1997.

This year's Windows World Open categories reflect the business challenges common to a diversity of organizations. Today, corporate developers and their solution providers face a number of issues associated with legacy systems, the Internet, intranets, adhering to company standards, and more, which they must address through their applications. Resolving these issues takes skill, tenacity, and focus. The Windows World Open gives developers an opportunity to submit their applications for judging by a panel of experts and to see how they measure up against their peers. Categories for the 1997 competition are:

- Business Intelligence Systems
- Core Business Systems
- Customer Service/Customer Support Systems
- Employee Information Access Systems
- Process Control Systems
- Workflow Systems and Collaboration Process Systems

Finalists will take part in the Windows World Open Awards Ceremony and winners will be presented with a trophy by Bill Gates during his keynote speech at 9 am on Tuesday, June 3, 1997.

- Awards Program 9 am Tuesday, June 3rd during Bill Gates keynote presentation
- Thomas B. Murphy Ballroom

intelligence systems

Finalist

The Associates

The Associates is a leading diversified consumer and commercial finance company that provides retail, leasing and wholesale financing for heavy-duty and medium-duty trucks and truck trailers, construction, materials handling and other industrial equipment and manufactured housing.

MDSS supports manufacturers, dealer/distributors and Associates personnel by providing key information for management of wholesale finance receivables. MDSS has strengthened relationships with existing customers and has been used as a marketing tool to attract new customers. With MDSS, customers can access multiple levels of information on outstandings, equipment and model types, delinquents and payoffs according to their individual hierarchy structure from the highest roll-up level to detail units level. Inventory aging and trends information is also available. A custom query and report builder empowers customers to develop ad hoc queries. Data can also be downloaded on demand to populate local databases.

Tools used
- **Accusoft Internet:** ToolPak 3.0
- **Crescent Software, Inc.:** QuickPak 3.0
- **Microsoft Corporation:** MS Windows 3.1, MS Visual Basic 3.0/4.0, MS Windows 95, MS ODBC 2.5, MS SQL Server 6.5.02, MS Visual Source Safe 4.0, MS Access 2.0, MS Windows NT 3.51
- **Novell:** NetWare 3.12/4.1
- **Pinnacle Publishing, Inc.:** Tab Pro 3.0
- **Visual Components:** Formula One 3.0

Finalist

Cerveceria Polar

Cerveceria Polar is a division of Empresas Polar, the largest diversified and solid industrial conglomerate in Venezuela. Empresas Polar's activities include the production, packaging, distribution and sale of beer and malt, flour, corn oil, rice, pasta, ice cream, wine and soda. Cerveceria Polar serves 85% of the beer market in Venezuela. They export to the Caribbean Islands, Colombia, Brazil, Europe and the United States.

Iceberg manages the entire operation of a beer sales agency: inventory control, invoicing, accounts payable, logistics, accounting information generation and administrative processes. It also provides smart tools to assist managers in decision making. For example, Iceberg provides comparison information about Polar's competition to allow for quick, knowledgeable adjustments of the company's marketing and advertising positions. Iceberg also provides a MapInfo interface for ad hoc queries that generate demographic data about sales, sales routes and market position.

Tools used
- **Third-party developer:** J.L. Sistemas, C.A. Caracas, Venezuela
- **Apex Software:** TrueGrid Pro 1.1
- **Blue Sky Software:** RoboHELP 95
- **Crescent Software, Inc.:** QuickPak Pro/4.0
- **FarPoint Technologies, Inc.:** Tab Pro 1.1
- **Microsoft Corporation:** MS Windows 95, MS Visual Basic 3.0/4.0, MS Access 2.0
- **Seagate Software:** Crystal Reports 4.0/5.0
- **Visual Tools, Inc.:** First Impression 1.1

Finalist

John Deere Health Care

John Deere Health Care, a wholly-owned subsidiary of Deere & Co., serves the health care needs of over 425,000 members. Formed in the 1970s to manage Deere & Co.'s escalating health care costs, John Deere Health Care now offers managed care programs to employers in eight states. The success of John Deere Health Care is based on the belief that high quality care is the most cost-effective care over time.

Decision Support System was developed to improve the quality of health care available to John Deere members. This client/server data warehouse application allows access to patient, provides, diagnosis and treatment information that previously resided on separate systems in various formats. Not only does the Decision Support System manage all the information associated with each provider's services, it also recreates "episodes of care" spanning many providers and services. This level of analysis allows John Deere Health Care to evaluate the effectiveness of its health maintenance and disease management strategies.

Tools used
- **Third-party developer:** Sequent Computer Systems, Inc., Rosemont, IL
- **Microsoft Corporation:** MS Windows 3.1, MS Windows NT 3.51, MS Windows 95
- **Oracle Corp.:** Oracle Developer 2000, Oracle 7.3
- **Sequent Computer Systems, Inc.:** Sequent DYNIX/ptx 4.1.3

Category

business systems

Finalist

BankBoston

BankBoston is a $62 billion money center bank. Its Credit Processing System (CPS) automates the loan origination process for Small Business Banking, whose products are offered through a 550-branch network in New England as well as through direct mail, telephone and the Internet.

CPS manages the processing of an increasing number of applications for credit products while ensuring that each application receives careful consideration. As applications for credit are entered into the system, information on existing customers is retrieved from corporate systems. CPS maintains information at the customer, credit request and loan facility levels, tracks processing turnaround time, and generates an approval document and customer letters. CPS integrates a credit scoring system and loan booking systems. Through the system's workflow component, lenders can select services from a menu, which are then implemented electronically or by centralized analysts.

Tools used

- **Microsoft Corporation.** MS Windows 95 MS Windows 3.1, MS Visual Basic 3.0/4.0, MS SQL Server 4.2
- **Seagate Software:** Crystal Reports 4.0
- **StarBase Corporation** VersionsVB 1.1
- **VideoSoft:** VSView, 1.0, VS VBX 5.0
- **Visual Tools, Inc.:** VisualSpeller 1.0

Finalist

Kmart Corporation

Kmart Corp. is one of the world's largest mass merchandise retailers with 2,161 discount stores located throughout the United States, Puerto Rico, the U.S. Virgin Islands and Guam.

The Kmart Allocation Application was custom designed by Kmart Information Systems to provide its planners with a tool to distribute merchandise. The cornerstone of the client/server application, which is designed for Windows 95, is its flexibility in determining the appropriate distribution of goods to stores in order to maximize sales and profits. The allocation vision is: Schedule the delivery of the right quantity and assortment of product to the right location in order to improve in-stock position and maximize sales and profits. The client can access both new and legacy data to build strategies and then asynchronously place requests to calculate store distributions. The host can access data across five mainframe and Unix platforms and runs in a transaction-oriented environment.

Tools used

- **Blue Sky Software:** RoboHELP 95
- **Computer Associates:** Endevor/MVS 3.72
- **FarPoint Technologies, Inc.** Spread OCX 2.5
- **IBM:** MQ Series, Distributed DB2, DB2
- **IBT** Project Workbench 2.0
- **Information Builders:** EDASQL 3.2
- **Microsoft Corporation.** MS Visual C++ 4.2, MS Visual Basic 3.0/4.0, MS Windows 95, MS Word 95
- **Seagate Software:** Crystal Reports Pro 4.5
- **Vinzo** Vinzo 4.0

Finalist

Merrill Lynch

Merrill Lynch provides comprehensive financial services to more than seven million individual and institutional clients in over 660 domestic locations with more than $830 million under management.

The Private Client (PC) Shell is a software utility designed to provide consistent access and a uniform view to market data, office automation and other client information. The program graphically represents a variety of tools and applications under a common user interface. The interface uses a "book" metaphor. The PC Shell allows the user to browse through local, client/server, mainframe legacy and Web-based applications in an intuitive way. Regardless of origin, all applications are easily integrated and divided into pages of information that are then structured into sections, chapters and ultimately into books. The integration level is such that the user is not aware of the 50 or more applications running simultaneously on their workstation. The system appears as a single hand-crafted application with an array of easily accessible functions.

Tools used:

- **Microsoft Corporation.** MS SQL 6.0, MS Windows 95, MS Internet Information Server, MS Visual C++ 4.2, MS Windows NT 3.51, MS Internet Explorer, MS Windows NT 4.0, MS Visual Basic 5.0, MS Windows 3.1, MS Access 7.0, MS OLE 2.0, MS ActiveX


The applications
you build with
Visual Basic 5.0
may produce some
surprising results.

Finalist

Promus Hotel Corporation

Promus Hotels operates more than 800 hotels under the Embassy Suites, Embassy Vacation Resorts, Hampton Inn & Suites and Homewood Suites brand names. The company is currently experiencing record growth, adding nearly 150 new hotels in 1996. With the growth and anticipated technology advances that will impact the hotel industry, Promus Hotels' Information Technology organization is focused on providing their franchisees with superior business solutions to drive profits and provide enhanced hotel performance information.

System 21™ was developed to replace the current property management system at each hotel, incorporating reservations, revenue management and decision support tools into a fully integrated business system. With the System 21 application, Promus Hotels is not only reengineering its hotel work processes but completely rethinking the way properties use software to conduct business. Promus Hotels has changed the paradigm of a hotel property management system, automating and integrating all key applications rather than just a few, augmenting the power of their current host systems with a client/server network, and introducing a desktop standard based on Windows 95.

Tools used.

- **Third-party developers:** DataCore Systems, Inc., Philadelphia, PA; Delta Software Systems, Inc., Memphis, TN; Genesys International Corp., White Plains, NY; Intec Overseas Software, Ltd., Edison, NJ; JLS Software Services, Atlanta, GA; Kalin & Lovegren Associates, Austin, TX; Maxim Group, Memphis, TN; Nationwide Contracting Service, Canton, OH; RPM-Systems, El Dorado Hills, CA; Universal Systems Technologies, Maitland, FL
- **Aeronomics:** Revenue Management System
- **Blue Sky Software:** RoboHELP 2.61
- **Delphi:** Breeze
- **Informix Software:** Informix 7.13
- **Microsoft Corporation:** MS Exchange 4.0, MS Systems Management Server 1.2, MS SQL Server 6.5.02, MS Windows 95, MS Windows NT 3.51, MS Windows NT 4.0, MS Visual Basic 5.0, MS Visual C++ 4.2
- **Park City Group:** Scorecard 3.6
- **Platinum Software:** Platinum SQL 3.2
- **Scopus Technology:** SupportTeam 3.62

Finalist

US Air Force Reserve/Air National Guard

The mission of the Air Force is to defend the United States through control and exploitation of airspace. U.S. Reservists and Guardsmen provide that professional capability around the world. Their daily tasks are to launch and control aircraft to support fighter, attack, airlift, strategic and space missions on behalf of the national security strategy. To perform this mission, they require access to maps, current information on geographical and political limitations, navigational aids and airport information. Mission-specific software enables fighter aircraft to hit their targets and allows airplanes to drop their cargo accurately. Global positioning satellite data allows precision locating for search and rescue and humanitarian efforts.

FalconView is a Windows 95/NT mission-planning system for military aviators. It provides aeronautical maps and geographically-referenced data that pilots, navigators and flight engineers use to plan missions and to gather situational awareness information used during flight. FalconView was designed by and for Reservists, but its user-friendly Windows interface has led to its implementation across Air Force flying units to over 13,000 users. FalconView leverages user familiarity with commercial Windows products to make it easy for aircrew members to view elevation data, satellite imagery, airport data and navigational aid and hazard information from their PC. Pilots use FalconView to build their flight plans, check safety-of-flight parameters, identify military airspace and print flight plans, maps and imagery.

Planning accuracy and safety have increased across the force due to the use of this precise digital data. A FalconView/GPS link also provides inflight precision location displays in the cockpit of many military aircraft, including Air Force One.

Tools used:

- **Third-party developer:** Georgia Tech Research Institute, Atlanta, GA
- **Blue Sky Software:** RoboHELP 2.61
- **Microsoft Corporation:** MS Visual C++ 2.1, MS Access 5.0, MS Windows NT 3.51, MS Word 95, MS Windows 95, MS Explorer 2.0, MS Developer's Network
- **MKS:** MKS RCS 5.0
- **No Mega Technologies:** Bounds Checker

service/ customer support systems



Finalist

California State Automobile Association

CSAA, the California State Automobile Association of America (AAA in California, Nevada and Utah), serves 3.3 million members and insures over 2 million people.

The CSAA Online Guide™ is a customized online help and knowledge management system. The system consists of the Guide itself and the Online Guide Author (OLGA). The Online Guide is a just-in-time information system that puts the corporate knowledge base on customer service reps' desktops. OLGA is a knowledgebase authoring, management and publishing system that supports the Online Guide through management and maintenance of the content. It features access security, an authoring interface, design formatting, editorial and review cycles, and multiple edition publishing.

Tools used.
- **Third-party developers:** Robertson Associates, Mill Valley, CA; Luminare Multimedia, Inc. San Francisco, CA
- **Apex Software:** True Grid 1 5/2.1
- **Crystal Services:** Crystal Reports 2.0
- **Dearware:** CCF Cursors 2.0
- **Microsoft Corporation:** MS Jet Engine Database 2.0, MS Jet Engine 2.5, MS Access 2.0, MS Visual C++ 4.2, MS Word 95, MS Help Compiler 3.1; MS Windows 95, MS DOS 6.2, MS Office Developers Kit 1.0, MS Visual Basic 3.0/4.0
- **PKWare:** PKZip/PKUnzip
- **SoftArc:** FirstClass Client 3.0
- **Visual Components:** Visual Writer Pro 2.25

Finalist

Hewlett-Packard Company

HEWLETT® PACKARD

Hewlett-Packard Co. designs, manufactures and services more than 24,000 electronic products and systems for measurement, computing and communications.

HP call managers provide front-line customer support, handling over 2.6 million calls per month. The Keep Incoming Calls Simple (KICS) electronic performance support system maintains consistency in the way they respond to customers. KICS support resources include an intranet database they can quickly search to ensure each call is referred to someone who can fulfill the caller's needs; integrated call management training and best practices processes to ensure callers will always obtain service; and integrated, just-in-time reference resources to assist call managers while they are handling a call. In addition, the intranet database is Internet-accessible to allow future direct access by customers to locate a HP customer support resource.

Tools used.
- **Third-party developer:** DLS Group Denver, CO
- **Adobe:** Photoshop 3 0
- **America Online:** AOL Press 1.2
- **Blue Sky Software:** RoboHELP 95
- **Free Software Foundation.** PERL 5.0
- **Lotus Development Corp.:** Lotus 1-2-3 5
- **Microsoft Corporation:** MS Windows Help, MS Visual Basic 3.0/4.0, MS Access 7.0, MS Word 95, MS Windows NT 3.51, MS Front Page Press 1.1, Webserver, MS Windows 3.1
- **Net Dynamics:** Net Dynamics 2.01
- **Netscape:** Netscape Server, Netscape Explorer 3.0
- **Oracle Corp.:** Oracle 7.3
- **Symantec Corporation:** Café 1.5



Finalist

Lawson Products, Inc.

Lawson Products' line consists of 33,000 expendable maintenance, repair and replacement supplies for all types of capital equipment, machinery and vehicles. Core competencies consist of value-added services, engineering consultation and inventory management. Its six distribution centers contain computerized material handling equipment that can fill 99% of customer requirements within 24 hours of order receipt.

Lawson Agent Works features database-driven CD-ROM and Internet catalogs and provides secure ordering capabilities for Lawson's agents and major accounts in Mexico and South America. The catalog viewer is Internet-enabled, easy to navigate and provides a rapid response time to queries. The catalog viewer interfaces directly to Lawson's online ordering and customer tracking system. The user interface has a Windows Explorer look, and offers the ability to directly interface back to the Internet catalog viewer.

Tools used
- **Third-party developer:** R.R. Systems, Inc. Brookfield, WI
- **FarPoint Technologies, Inc.:** Spread Control 2.5
- **LEAD Tools:** LEAD Tools 4 5
- **Microsoft Corporation:** MS Access 7.0, MS Visual Source Safe 4.0, MS Windows 95, MS ODBC 2.5, MS Visual Basic Enterprise 5.0 Edu, MS SQL Server 6.5, MS Visual C++ Developer Studio 4.2
- **WexTech Systems, Inc.:** Doc-to-Help 2.1

Finalist

Buster Enterprises Inc.

Buster Enterprises, a leader in the indoor air quality industry, developed the DuctBusters™ international franchise network, which provides the most advanced processes for remediation of duct and HVAC systems.

Litigation concerning harmful indoor contaminants is rising sharply. Due to the urgency of such situations, remediation proposals require rapid project planning and response. The BusterLink™ Estimator addresses this need by calculating and producing formal job proposals in 1/5 the time of conventional estimating methods, although such proposals can include 50 types of mechanical items, each with 30 or more individualized services, and each service for each item having its own materials and production rates. Customer changes are now handled seamlessly as proposals can be created with unlimited job option scenarios using the estimator's cloning functions. The precise data now included on the signed bid proposal eliminates miscommunications with clients. The system also provides a way to standardize estimating in the

Tools used:
- **Third-party developer:** Kiehl Consulting, Largo, FL
- **Corel:** Photo-Paint 3.0
- **Microsoft Corporation:** MS Access 2.0, MS Windows 95, MS Image Editor 3.10, MS Visual Basic Enterprise 4.0 Ed., MS Visual Source Safe 4.0, MS Paint for Windows 95, MS Windows NT Server 4.0, MS Access 7.0
- **Sheridan Software Systems, Inc.:** Data Widgets 2.0
- **Solution Soft:** Help Breeze 2.0
- **VideoSoft:** vsOCX Controls 5.0

Finalist

Lawson Products, Inc.

Lawson's line consists of 33,000 expendable maintenance, repair and replacement supplies for all types of capital equipment, machinery and vehicles. Core competencies include personal sales agent representation, engineering consultation and inventory management. Its six distribution centers contain computerized material handling equipment that can fill 99% of customer requirements in 24 hours of order receipt.

The Agent Order System is a sales force automation, order entry and records management system. The application allows agents to manage customer accounts, create and place orders to Lawson's six distribution centers, track sales and sales calls, and create individualized custom price books. A built-in report writer handles all standard and custom reports. The system also embodies a full communications system that automates data replication and synchronization with Lawson's corporate database and master distribution systems.

Tools used:
- **Third-party developer:** R.R. Systems, Inc. Brookfield, WI
- **Crescent Software, Inc.:** PDQCom 3.2
- **FarPoint Technologies, Inc.:** Spread Control 2.5
- **Inner Media, Inc.:** DynaZip 32 3.0
- **LEAD Tools:** LEAD Tools 4.5
- **MicroHelp:** OLE Tools
- **Microsoft Corporation:** MS Access 7.0, MS Visual Source Safe 4.0, MS Windows 95, MS ODBC 2.5, MS Visual C++ 4.2, MS Visual Basic Enterprise 4.0/5.0 Edu, MS MSDN Library
- **Seagate Software:** Crystal Reports 5.0
- **WexTech Systems, Inc.:** Doc-to-Help 2.1

Finalist

NASD Regulation, Inc.

The National Association of Securities Dealers-Regulation (NASDR) is the leading securities industry self-regulatory organization, with more than 5,500 member firms and 500,000 registered securities representatives nationwide. NASDR is responsible for overseeing, assisting, assessing and administering regulatory compliance for these firms and registered representatives.

The CornerStone performance support system provides the training, advice, information and tools that NASDR examiners need to perform their jobs — and it provides just-in-time, on-demand access. The benefits realized from the program include a 42.3% return on investment with a payoff in 2.2 years and dramatically reduced training time. It has also eliminated the need for examiners to create their own libraries, reduced exam preparation time and increased consistency in exam performance.

Tools used:
- **Third-party developer:** DLS Group, Inc. Denver, CO
- **Adobe:** Illustrator 5.5
- **Blue Sky Software:** RoboHELP 95
- **Corel:** Corel Draw 5.0
- **Macromedia Software:** Director 5.0
- **Microsoft Corporation:** MS Visual Basic 3.0/4.0, MS Word 95, MS Access 2.0, MS Windows 3.1

Finalist

Entergy Operations Inc.

Entergy Operations Inc. (EOI), the nuclear operations company of Entergy Corp., is responsible for the design, modification, operation and maintenance of five nuclear power generation plants in Arkansas, Louisiana and Mississippi. Several of the EOI stations rank among the top nuclear plants in the U.S.

At the Arkansas Nuclear One - Unit 1 (ANO-1) Nuclear Power Generation Facility, the main steam turbine generator is the most important piece of equipment; it turns the heat and pressure generated by the nuclear reactor into the final electric product. Prior m the installation of the Turbine Supervisory Instrumentation System (TSIS), the operations, maintenance and engineering staff had little information about the condition of the turbine. The TSIS provides realtime-data acquisition and control information on numerous parameters m nuclear operators at ANO-1. The system uses a networked, PC-based platform to provide vital machine health data on the operating floor, in the Nuclear Control Room and throughout the corporation via a Plant Process Computer WAN connection.

Tools used:
- **Microsoft Corporation:** MS Windows Help, MS Windows NT 3 51
- **Modicon:** Modbus DDE Server
- **Science Applications International Inc.:** SAIPMS Screen Editor
- **Wonderware Corporation:** InTouch 5 1b

Finalist

Laboratorio Analytica S.A.

Laboratorio Bioquimico serves the overall management of the lab as an accounting and administration tool. It also sends, receives and organizes data from select laboratory equipment. Examination requests flow to and from clients and a server application through a layered process. Output produced by the process includes printed examination results, client and server accounting information and statistics. All applications in the program comply with interface standards, giving the system a consistent look and feel.

Communications with laboratory instruments are achieved through driver technology based upon medical standards and OLE. A server manages a custom interface-compliant set of drivers, and exposes them through OLE automation to other applications. Communications between client and server processes are conducted through Windows Sockets, which allows the use of a LAN, telephone-line or Internet connection. Laboratorio Bioquimico is user-friendly and the communication components work unattended. The clarity and systematization of the output also simplifies administrative functions.

Tools used:
- **Third-party developer:** LT Sistemas Santa Fe, Santa Fe, Argentina
- **Microsoft Corporation:** MS Windows NT Server 4.0, MS Access 2.0, MS Visual C++ 4.2, MS Visual Basic 3 0/4 0, MS Windows 95

Finalist

Stepan Company

Stepan Company is a leading manufacturer of surfactants. The majority of the company's products are used in the production of detergents for laundry and personal care soaps.

The SCADA (Supervisory Control and Data Acquisition) system is an interface application that allows an operator to control and monitor five areas of the manufacturing facility from a central control room. It features 280 individual windows, historical and realtime charts with trending, statistical process control, report generation and a relational database recipe system utilizing PowerBuilder (front end) and Access (back end). Multiple nodes communicate in realtime on an Ethernet network, allowing for realtime graphical animation across all three nodes simultaneously. A custom security system, based on access level, sets limits on a user's ability to control real-world objects and access operating system and database features. A control system allows the use of over 280 pop-up messages and guides operators through their batches.

Tools used:
- **Third-party developer:** Delta Control Systems, New Providence, NJ
- **Microsoft Corporation:** MS Windows NT 3 51, MS Access 2.0, Netbell Transport Protocol 3.0
- **Netware:** NwLink IPX/SPX Transport
- **Powersoft Corporation:** PowerBuilder 4.0.2
- **Wonderware Corporation:** InTouch 5.1b, Intouch SPC 5.0, ABTCP 5.1, AB1784KT 5.0

systems & collaboration process systems

Finalist

Athans & Taylor Chartered Accountants

Athans & Taylor, one of the top ten accounting practices in Western Australia, provides public accounting services, including taxation, auditing, Information Technology services and management consultancy.

Synergy - CPA is an enterprise-wide solution to managing electronic documents, contacts, jobs and workflow, E-mail, and the dissemination and updating of procedures manual material. Its client-centric approach allows for the tracking and viewing (from an individual client perspective) of all database information. Integration with third-party accounting back-ends eliminates the duplication of data and allows an organization to maintain only one database. Search functions let users query the database without having to understand the underlying data structures. A built-in browser allows the publishing of quality assurance documents and procedure manuals on an intranet without redesigning them for the web. Synergy allows an extensible client-profiling model that can be suited to almost any market analysis requirement.

Tools used
- **Third-party developer:** Success Technology Mayaree, Australia
- **Great Plains Software:** Dynamics 3.15
- **Microsoft Corporation.** MS Office Professional, MS Access 7.0/8.0, MS Windows 95, MS NT Workstation 3.51, MS Visual Basic Enterprise 4.0, MS SQL Server 6.5, MS Windows NT Server 3.51, MS Visual FoxPro 3.0, MS Windows NT Server 4.0
- **Seagate Software:** Crystal Reports 5.0

Finalist

EDS

EDS shapes the way information is created, distributed, shared, and applied for the benefit of enterprises and individuals around the world. EDS, a leader in the global information services industry, helps customers use technology to recast their economics and to identify new opportunities.

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Tools used
- **Microsoft Corporation.** MS Windows 95, MS Windows NT Desktop 4.0, MS Windows NT Server 3.51, MS Visual Source Safe 4.0, MS Visual C++ 4.1
- **Rogue Wave:** Tools.h++ 7.0
- **Seagate Software:** Crystal Reports Pro 5.0
- **Stingray Software:** Objective Toolkit 1.1
- **WexTech Systems, Inc.:** Doc-to-Help 2.1
- **Wintertree Software:** Sentry Spelling-Checker 4.2 Engine

Finalist

Southern California Edison

Southern California Edison, a regional electric utility company, is currently in transition from a regulated to an open market industry. A system is needed to prepare Southern California Edison for this transition by reducing future processing costs; improve support for marketing and improve customer relations.

The Retail Contract and Pricing Administration System (RCPAS) is used by 100 employees. It supports all functions required in the administration of retail energy contracts, including decision support related activities, distribution of contract origination to account and product managers, retrieval and sharing of contract documentation as needed, and support for billing for contract-based pricing. The system uses a status-based work flow to distribute service activities to departments involved in the retail contract life cycle. The system integrates process-based data access from foreign databases required for decision support and price calculation functions.

Tools used
- **Logic Works:** ERWin-ERX for PowerBuilder 2.5
- **Microsoft Corporation:** MS Windows 95, MS Visual Basic 4.0, MS Word 95, MS Visual C++, MS Windows 3.11
- **Seagate Software:** Crystal Reports 4.0
- **Sheridan Software:** Calendar Widgets 1.0
- **Sybase Corporation:** Sybase SQL Server 11
- **VideoSoft:** VideoSoft TAB & ELASTIC 5.0

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COMMENTARY

HP leads by following

DAVID MOSCHELLA

MORE THAN JUST a big bet on electronic commerce, Hewlett-Packard's proposed $1.2 billion acquisition of VeriFone, Inc. is symbolic of a new assertiveness at the world's second-largest computer company.

Never one to indulge in our industry's fixation on celebrities and highfliers, HP has always been respected but rarely feared. It dominates peripheral markets such as printers, testing and measurement equipment and calculators, but in mainstream computing — systems, PCs, networking and software — it has usually had to settle for being a solid jack-of-all-trades.

However, HP recently has been working hard to shed this image and position itself for enterprise computing leadership.

Last year, it became Intel's lone partner in the development of the 64-bit Merced chip. This year, it has replaced Digital as Microsoft's key business market supporter and entered a multifaceted, preferred-vendor alliance with Cisco.

Just six months ago, there was no disputing that Compaq was the leading Wintelco (Windows, Intel, Cisco) systems partner.

Now, one would have to give a slight edge to HP, at least in terms of the corporate market. HP's steadily rising share in the enterprise server business has been a cause and a by-product of this newfound status.

Critics complain that HP's strategy is an oxymoron; you can't lead by following. Clearly, HP is the junior partner in all three Wintelco alliances. It is also true that many high-profile IT vendor partnerships have led to nothing. Just look at how little has come out of the once heavily promoted Digital/Microsoft venture.

But HP is more than just an eager Wintelco follower. In the area of customer service, it offers its own form of enterprise systems leadership. *Computerworld*'s first two waves of customer satisfaction research — Networks and Systems — covered a total of 19 different hardware, software and service categories. HP participated in seven of those segments. In all seven, HP ranked first or second. No other vendor came close to this performance.

PULLING PIECES TOGETHER

Enterprise customers consistently tell us that although they value the innovation of specialized companies such as the Wintelco members, there is still a need to pull together diverse technologies to form an integrated system. As our industry moves toward increasingly complex electronic commerce, this need can only increase.

With the decline of Digital, HP has emerged as IBM's main — and arguably its only real — multiplatform U.S. rival. But unlike IBM, HP doesn't have its own ambitious software agenda. Whereas IBM pushes Lotus, DB2 and OS/2, HP relies mostly on Microsoft, Unix and the broader independent software vendor community. It then tries to fill in the holes with its own systems management and middleware products.



The goal is to provide the best of a systems company's customer support with the power of Wintelco innovation. It may not be leadership in the traditional technical sense, but in today's market, it sure looks like a winning formula. □

Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david_moschella@cw.com.





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Briefs

[redacted]

Tools a small gain in data-sharing crusade

By Tim Ouellette

SOFTWARE IS becoming the next tool in the storage market's quest for its Holy Grail — better data sharing among different computer platforms.

But observers said the new offerings from high-end storage vendors are costly and proprietary, two factors that could blunt their value.

"On the surface, some of these tools look good, but in terms of practical value," there isn't a lot yet, said Collin Rankine, a senior industry analyst at Giga Information Group in Norwell, Mass.

As storage hardware prices drop and disk arrays become more like commodities, vendors such as EMC Corp., IBM and Hitachi Data Systems Corp. are rushing to develop software tools that can boost the value of their disk systems and differentiate themselves.



Harris Methodist's Larry Blevins factors separate pricing for EMC's software tools into his mainframe management budget.

The products include Hopkinton, Mass.-based EMC's recently announced DataReach and TimeFinder (CW, April 28) and IBM's Snapshot Copy. They perform functions such as data migration, remote mirroring and high-speed backup.

The software tools add value to a hardware box that now simply maintains chunks of data.

SAVING TIME

For example, NationsBank Corp. in Charlotte, N.C., saved almost four months of weekend work and 40 hours of system outage by using Santa Clara, Calif.-based Hitachi's Online Data Migration tool to move data from older Hitachi storage arrays to the newer 7700 models, said Howard Lewis, a senior vice president at the bank.

But users must pay a separate, and usually high, price for the software, a fact that analysts acknowledged has kept some users from trying the products. Still, some early users said the

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Pentium II-based PCs: Strong performers

REVIEW▶ *But heat's a problem, and you might want to wait for NT 5.0*



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REVIEW▶
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Does the job as a high-end desktop in a corporation or for multimedia development.

By Chris DeVoney

INTEL CORP.'s Pentium II has plenty of credentials to back its claim as the heir apparent to the Pentium Pro and Pentium MMX chips. In testing three computers using the 266-MHz version of the CPU, which was unveiled last week, *Computerworld* found that the systems could perform up to 250% faster than 200-MHz Pentium, Pentium MMX and Pentium Pro computers.

Even legacy 16- and 32-bit applications get a boost, but don't expect miracles. The gains are in the paltry range of 13% to 20%. And if you want the best performance from leading-edge hardware, you have to play the waiting-for-NT game, giving up Windows 95 for the incomplete Windows NT. We also found that high heat, tight spaces and perplexing computer interior designs may require you to take a closer-than-normal look under the hood before buying these machines.

For this evaluation, we examined multimedia, business-enabled systems from Compaq Computer Corp., Gateway 2000, Inc. and NEC Computer Systems. The Gateway 2000 G6-266M ($3,458 for Windows 95; $3,607 for Windows NT with a different modem) was a production unit. The Compaq Deskpro 6000 ($4,598) and NEC Deskmate Professional ($4,828) were preproduction models.

The Pentium II gets its strong performance through several changes in CPU design. Like its cousin, the Pentium Pro, the Pentium II offers a large, internal Level 1 CPU cache. The Pentium II adds 54 instructions from the Pentium MMX, which

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PENTIUM II

PC makers see Intel moving onto their turf

By April Jacobs

ONE BIG difference between Intel Corp.'s Pentium II processor, which was unveiled last week, and earlier Pentium chips is a new cartridge design that incorporates Level 2 cache and the CPU in one module.

That design should benefit users who look for performance gains, but it has some hardware makers feeling nervous.

That's because even though Intel already controls the vast majority of the chip market, hardware makers have always been able to establish differences in their PC designs through add-ons and special cache configurations.

Linley Gwennap, an analyst at "Microprocessor Report," a newsletter in Sunnyvale, Calif., said the Pentium II is "a good thing" overall for PC users and manufacturers.

THANKS FOR THE HELP

"Basically, Intel is doing all the hard work in integrating the cache and the processor," Gwennap said. Although that enables improved performance for desktops, Intel's new chip package also potentially limits the variety in products based on it, he said.

Prices for the Pentium II range from $636 for the 233-MHz version to $1,981 for the 300-MHz chip designed for workstations. No prices for 400-MHz chips were announced last week.

That is an expensive PC ingredient for the average home user, but because Intel's latest chip is aimed at corporate desktops and promises improved multimedia and number-crunching capabilities, business users may be willing to bite.

By giving the chip a dynamic execution core that accelerates 32-bit performance on the Windows NT platform, along with MMX graphics-enabling technology and speeds of 233 to 400 MHz, Santa Clara, Calif.-based

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Pentium II PCs: Strong performers

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boosts its multimedia performance. Intel moved the optional Level 2 (external) cache from the motherboard into the Pentium II package and runs the cache at half the CPU clock rate (at 133 MHz for a 266 MHz CPU). Most Pentium and Pentium Pro computers run their caches at 66 MHz.

But the Pentium II is bloated from its predecessors' familiar single "chip" package that fits into a motherboard-mounted socket. Pentium II is a Walkman-size, 13-ounce package that attaches to the motherboard via an edge connector.

The mounting and location of the Pentium II is important. With its increased weight, it can loosen from the motherboard's edge connector if the computer is shaken or dropped. That had happened when our preproduction Compaq unit arrived. The company's production units use more substantial clips to secure the processor to the motherboard.

The Pentium II's increased power usage requires substantial airflow to cool the unit. In cramped desktop computers, designers should factor in an extra fan, and users should keep Pentium II machines out of rooms that are warmer than 90 degrees Fahrenheit. An on-screen warning in Windows 95 or Windows NT informs a user of high-temperature conditions. We saw that warning several times in the Deskpro 6000, because it doesn't have an extra fan.

The Pentium IIs get their best performance running 32-bit software under a 32-bit operating system such as Windows NT. But NT 4.0 doesn't support Universal Serial Bus (USB), digital video disc (DVD) or similar hardware, and Microsoft won't add NT support for those devices until NT 5.0, due in the first half of next year.

Windows 95 offers a half-loaf solution that supports USB but only partially supports new devices such as DVD. Full support won't arrive until Memphis, Windows 95's heir, which is scheduled to surface sometime late this year or early next year.

The alternative is to run Windows NT and lose the use of USB and many multimedia devices that are natural matches to the MMX processing power of the Pentium. By running Windows 95, you lose the top edge of the potential performance, but you don't miss out on the other potential uses from the hardware.

For that matter, all three machines showed some preannouncement glitches. Compaq sells the Deskpro 6000 with Windows NT only, so we couldn't run any Windows 95 tests (*PC World*'s WorldBench, Intel's Media or Multimedia Applications Benchmark). The Gateway system used the new Ultra33 disk controller from Promise Technology, Inc. in San Jose, Calif., and therefore lacked needed drivers to install Windows NT.

To level the playing field, all three vendors sent review units equipped with a 266-MHz Pentium II with 512K bytes of onboard cache, 64M bytes of Extended Data Out memory, a 1.44M-byte floppy drive, a hard disk with a minimum of 4G bytes of space, a video board with 4M bytes of memory, a 17-in. color monitor, 16-bit audio and Musical Instrument Digital Interface sound, and a 10M/100M bit/sec. Ethernet network card. Still, some differences were evident.

The Deskpro was the only desktop unit. NEC and Gateway sent minitower units (the Gateway features a new, sleeker look and was the quietest unit of the three). All three units used well-illustrated and color-coded markings for cable and device connections.

Compaq and NEC used a 4.3G-byte Ultra SCSI drive, and Gateway stuffed a 6.4G-byte Ultra SCSI drive in its system. All drives were fast enough to support the systems.

Gateway packs a 12-speed CD-ROM player, and NEC includes a 16-speed unit. Gateway also includes an Iomega Corp. Zip drive in the package. Compaq includes the Panasonic PD-CD unit, which reads CD-ROMs at six-speed but can write and rewrite reusable phased-change disk (PD) cartridges.

NEC and Gateway provide connectors for the 10M bit/sec. USB, which will become the standard for all low- to medium-speed serial devices. We connected Eastman Kodak Co.'s DVC 300 digital camera to the Gateway unit and successfully transferred pictures suitable for World Wide Web use or corporate training.

We couldn't use the camera on the Deskmate, because NEC didn't provide its version of Windows 95 in time for this review and because of that Microsoft catch-22: The best performance comes with 32-bit applications under Windows NT, but NT lacks the drivers to use hardware features such as USB, DVD and IEEE 1493 (Apple's Firewire high-speed serial bus). □

DeVoney is a technology reviewer in Seattle. He can be reached at chrisd@cybercritic.com.

Benchmarking

We ran several industry-standard benchmarks on these systems and three others: two MPE desktops from Micron Technology, Inc. in Boise, Idaho, with a 200-MHz Pentium or an MMX processor and a Gateway 2000 P5 200-MHz Pentium Pro system.

For Intel's Multimedia Application benchmarks, which test audio, video and still-photograph multimedia functions, the Pentium IIs' scores were about 100% better than the other machines'. The Gateway G5 scored 251, and the Pentium scored 131. The MMX scored 178, and the Pentium Pro scored 118.

The most impressive improvement was with the Ziff-Co SYSMark for Windows NT 4.0 tests, which exercise five 32-bit applications and one 16-bit application under NT 4.0. The Pentium IIs outpaced the Pentiums by 2.5 times (252 for the NEC vs. 106 and 120) and showed a 25% improvement over the Pentium Pro (204).

But *PC World*'s WorldBench 95, which tests three 16- and three 32-bit applications under Windows 95, showed only 15% to 20% improvement (259 for the Gateway vs. 215, 229 and 229).

—Chris DeVoney

PRODUCT REVIEW ▶
Pentium II PCs

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Intel

CONTINUED FROM PAGE 43

Intel is betting on what corporate users want most for high-end desktops, workstations and, later, servers.

Chris Goodhue, an analyst at Gartner Group, Inc. in Stamford, Conn., said that although Intel's latest chip has all the bells and whistles, selling it on pure business value may not make sense, especially for end users who mainly do word processing, send electronic mail and perform Internet-related tasks.

"Maybe five or 10 years from now visual computing will have come along far enough to make a real case, but for now, I just don't see it," Goodhue said.

Servers based on the Pentium II aren't expected to debut until later this year, according to Intel, because the Pentium II scales up to only two processors.

Features of Intel's Pentium II

- → **233 to 400 MHz for faster throughput**
- → **Designed to optimize 32-bit Windows NT**
- → **MMX-enabled graphics**

For PC and server makers, such as Round Rock, Texas-based Dell Computer Corp., the Pentium II should be a boon.

Michael Dell, Dell's CEO, said the new cartridge technology of the Pentium II won't make hardware like commodities, despite nervousness expressed by analysts and manufacturers.

"Hardware makers have always found ways to differentiate themselves," Dell said. He added that support and service are two areas that can make a product stand out. □

Data sharing

CONTINUED FROM PAGE 43

added value is worth factoring the cost into data center budgets.

"Instead of viewing software as a separate solution, we look at it as part of a total solution to manage the mainframe," said Larry Blevins, chief information officer at Harris Methodist Health System in Fort Worth, Texas.

Harris Methodist uses EMC's secure backup utility, FDRSOS, which uses EMC's high-speed proprietary data channels instead of the corporate network to back up data.

Proprietary software technology such as EMC's is common among these storage tools, so users who wish to keep a mix of storage vendors in the data center could face a new set of interoperability issues.

VENDOR MIX A PLUS

"People continually tell me they want more than one vendor's storage device in their data center so they don't have to bet all their future functions on one company," said John McArthur, an analyst at International Data Corp. in Framingham, Mass.

There is hope for some future cross-vendor support, though.

That's because vendors may decide to place an operating system such as Unix on the boxes. Unix is more flexible for software programming than the hardware microcode used in the disk arrays.

Even so, the tools are so specific that Rankine advises users against considering them when searching for a new disk array for the data center.

"The vast majority of people won't use this stuff, so I recommend that they focus on reliability and price," Rankine said. "Then if you have a specific [software] function you need done, you can always isolate that application on a separate vendor's disk array."

For example, a user at a telecommunications company who recently went through a storage purchase said the extra software tools were for more specific functions, not general business needs. The user asked not to be named.

"They are nice features, but you can't cost-justify them today for the majority of our applications," that user said. □

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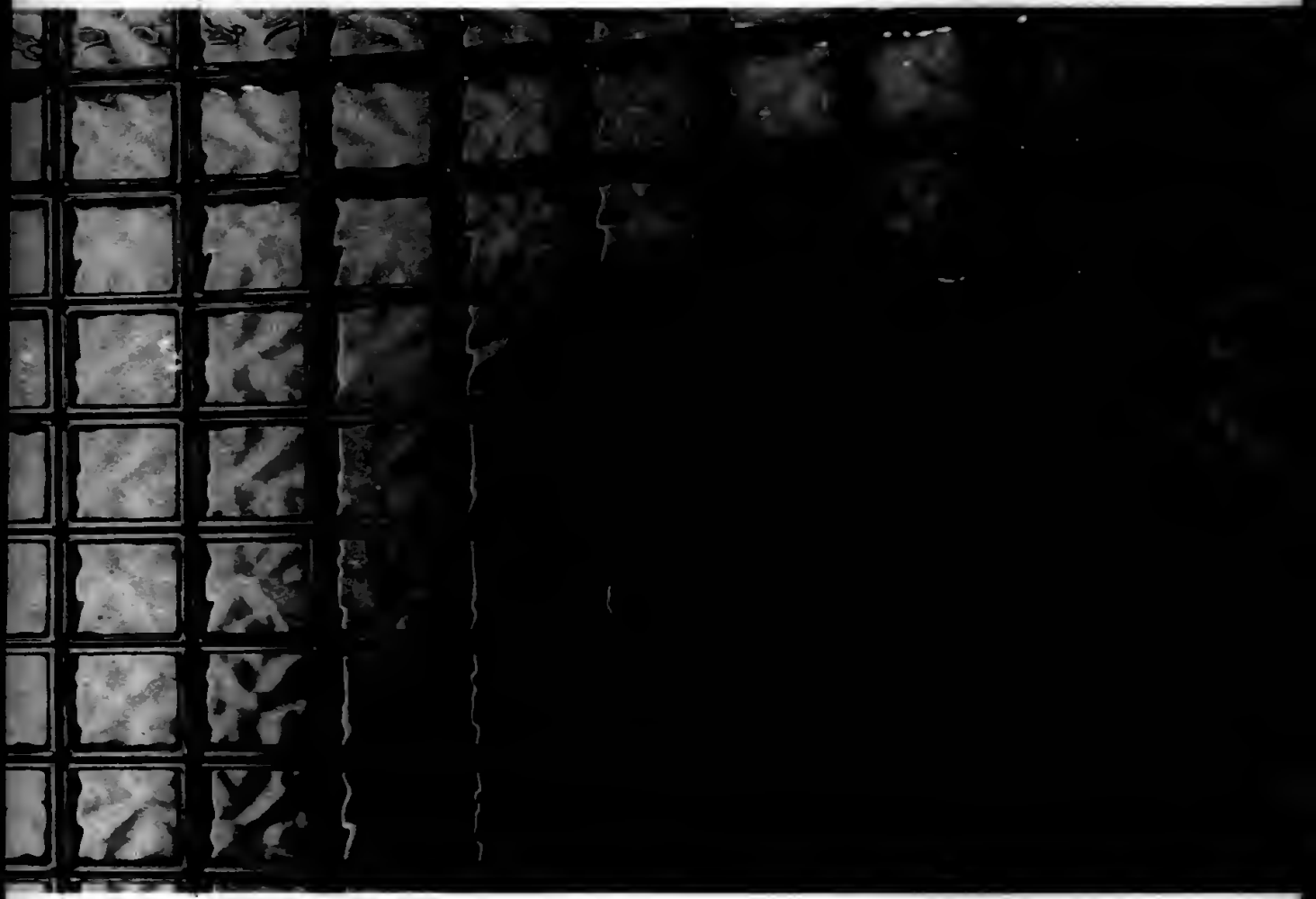
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Briefs

ORACLE8 DATABASE

Steep learning curve ahead

By Craig Stedman

ORACLE CORP.'S upcoming Oracle8 database will offer many features that promise to make work easier for end users. But it may be a different story for the IS departments charged with managing the beast.

Oracle database managers said they have many new tricks to learn before their companies can take full advantage of Oracle8. That is one reason why many Oracle shops don't plan to rush things with the new database, even though it is supposed to boost performance and scalability while reducing the data downtime end users have to endure [CW, May 5].

ANXIOUS TO UPDATE

Not all customers are fazed by the prospect of learning to live with Oracle8, which is due to ship next month. For example, David Buch, director of data warehousing at Capital One Financial Corp. in Falls Church, Va., said he is itching to get at Oracle8.

"We aren't afraid of complexity when it adds the kind of features that will make our users'

Oracle8, page 48



Capital One's David Buch: Oracle8's features "would be welcome even if they added complexity" to the database

Oracle tool ties apps to the Web

By Sharon Gaudin

USERS ARE EAGER to port their legacy applications to the World Wide Web with Oracle Corp.'s latest version of its Developer 2000 tool. But they will have to wait until the fall for the next update that supports application development on network computers.

Oracle last week delivered its Web-enabled Developer 2000 Version 1.4W, which is the first version to let users port applications to run across the Internet. That makes data accessible via Web browsers without writing new code. That portability is crucial to Oracle users who don't have the time or money to rewrite existing code to run on the Internet, observers said.

To get Version 1.4W out the door, Oracle delayed delivery of Version 2.0 of Developer 2000, which is slated to support the company's Network Computing Architecture in addition to the Web. Oracle switched that release date from this month to the fall.

Oracle tool, page 50



"We didn't have a good handle on the workload in our network."

– Eddie Curran, operations automation, Transquest

Monitoring tools seek that performance edge

▶ *Delta, HBO staffs track network traffic*

By Patrick Dryden

POOR PERFORMANCE by networked applications can sap user productivity, so information systems managers are seeking monitoring tools to help them be better business partners.

Delta Airlines agents at eight reservation centers endured slow responses for flight information and customer profiles as they migrated to a graphical version of their main application. The agents assumed the delays were part of their work, so they put up with longer — and therefore fewer — customer calls before they complained.

The new interface boosted bandwidth demands on their LANs and WAN. Sagging performance meant lost revenue, but the IS group didn't know about the delays until their own telephones rang.

"We couldn't see how applica-

Monitoring, page 48

More bridges help journey from Unix to NT

▶ *Products offer integration features*

By Jaikumar Vijayan

VENDORS ARE ACCELERATING their efforts to bridge the Unix and Windows NT worlds.

For example, NetManage, Inc., a Cupertino, Calif.-based vendor of PC connectivity software, recently announced its Chameleon UnixLink 97 software suite for PC-to-Unix connectivity.

The product lets Windows NT and Windows 95 users access, manage and administer Unix applications from within a Web browser via the Internet.

VIRTUAL SESSIONS

With it, users can turn their PC clients into X Window System terminals for running virtual Unix sessions over the Internet and corporate intranets.

"I think it is a great idea, especially if I can use any browser I want" to access Unix applications, said Bob Tomasevich, a senior technical specialist at Sears Roebuck and Co. in Hoffman Estates, Ill. NetManage's product supports Microsoft Corp.'s Internet Explorer and Netscape Communications Corp.'s Navigator.

Bridges, page 48

NEW FEATURES IN ORACLE8

Feature	Function
Database table partitioning	Lets data be managed in smaller chunks
Database transaction queuing	Frees users from waiting for responses
Pooled/multiplexed user connections	Funnels users through fewer connections
Parallel data replication	Loads distributed databases at the same time
Support for object technology	Defines business functions as objects

Oracle8 packs learning curve

CONTINUED FROM PAGE 47

lives easier," Buch said. Capital One warehouses 2T bytes of data in Oracle-based data marts and is especially interested in promised enhancements such as table partitioning and parallel replication. Those features should help reduce the throughput and data availability problems that can afflict very large databases, he said.

But other users are more awed by Oracle8's magnitude. New support for object technology is the biggest and most obvious change Oracle managers face, because they currently deal only with relational data. Various other new features will also make Oracle8 a very different animal than previous versions of the database, those users said (see box above).

"From the readings I've done to this point on Oracle8, I'm treating it almost like a brand-new product," said Hugh Allan, manager of information technology at Dunlop Tire Co. in Amherst, N.Y. "It's almost like we're switching to Informix and starting over."

PARTIAL BACKUPS

The ability to partition database tables is one feature that should yield clear business benefits, by allowing piecemeal backups that cut data downtime for end users, Allan said. "But just that alone is going to be an adjustment [for database managers], because that's not the way we're taught in Oracle today. It's all or nothing now."

Dunlop may not move to Oracle8 until 1999, Allan said. The tire maker has yet to upgrade its 30 databases to the latest release of Oracle7 and will likely go there first this fall. "Going release by release gives the IS staff a better chance to adapt," he said.

Oracle8's learning curve was one of the topics of discussion when database administrators gathered in Dallas two weeks ago for the annual conference of the Oracle database user group.

Oracle is running five-day training classes for Oracle8, "and people come out with their eyes glazed," said Bob Navarro, an internal Oracle consultant at The Boeing Co. in Seattle.

The need to learn Oracle8 is daunting for users who are stretched to the limit running their existing databases.

"I'm just barely keeping my head above water now," said Charles Jones Jr., a database administrator at Caterpillar, Inc. in East Peoria, Ill. "But I think we'll just be pressured to work harder, because there will be people who want the new features. And you can't slow them down."□

Monitoring

CONTINUED FROM PAGE 47

tion traffic traversed the network, so the user groups were calling to tell us about problems," said Eddie Curran, manager of operations automation at Transquest, Inc., Delta's IS arm in Atlanta. To reverse the situation, Curran began beta-testing the Contour monitoring system from Network Intelligence, Inc. in Palo Alto, Calif.

The IS department at Home Box Office, Inc. headquarters in New York faced a similar problem. One of the company's most important applications tracks videotapes that must travel among departments on a tight schedule. Because it lacked a way to profile user activity, IS couldn't detect slowdowns — it only could react to failures.

"By the time a problem bleeds up to us in third-level network support, it's a crisis because 10, 20 or 30 users are missing deadlines," said Michael Smith, HBO's director of network strategy.

EARLY WARNING

Smith said he adopted the original application monitor, EcoScope from Compuware Corp. in Farmington Hills, Mich., because "We needed a way to measure response times so we could treat symptoms early."

Such performance monitoring systems are in high demand as IS managers strive to ensure quality service for their users. Last fall, Platinum Technology, Inc. in Oakbrook Terrace, Ill., introduced one called WireTap. Contour and others appeared last week at Networld/Interop '97 in Las Vegas.

At Delta, Curran said Transquest keeps 130 LANs under surveillance using Contour's PC-based probe software.

Recently, for example, Contour revealed that a network adapter in one Delta reservation center was sending bad packets. Nothing had failed, but that adapter's retries added traffic to the LAN, slowing overall performance. Central IS dispatched a field service technician to replace the specific adapter, surprising the users, Curran said.

"They weren't aware they had a problem, so now they perceive us providing proactive service," Curran said.

Contour costs $6,750 for each Domain Manager, software that provides a monitoring console and relational database for data gathered from its probes as well as Remote Monitoring and Simple Network Management Protocol agents. It requires a server running Windows NT, Sun Microsystems, Inc.'s Solaris or Hewlett-Packard Co.'s HP-UX. PC-based Contour probe software is free.

At HBO, Smith said, EcoScope promises a way for the support staff to be proactive. The tough part, he said, is adding EcoScope alerts to the current network management console without overloading that system and its operators.□

Transquest reaches for next level

Transquest plans to roll out Contour probes to 300 more LANs this year, but as Network Intelligence's premier customer, the company is demanding enhancements.

"We initially wanted one enterprisewide view covering both reservation and airport users, but we wound up with five views," said Eddie Curran, Transquest's manager of operations automation.

Heavy activity among the five Domain Manager Nexus IS managers to compare information manually, outside of Contour's automated system.

To extend Contour's capabilities, its users got favorable response from Command Post, the control point-consolidator engine from Boole & Babbage, Inc. in San Jose, Calif. The full-time staff watching Command Post can warn the network and systems specialists about slowdowns.

Help desk and field service technicians also want to see baseline and current performance [illegible] graphical report viewing via a Web browser and Contour may implement client capability from Network or a third party in due time this year, he said. — Patrick Dryden

More bridges help Unix-to-NT journey

CONTINUED FROM PAGE 47

Tomasevich uses NetManage's product to manage the company's AIX-based Unix applications from a Windows 95 client. Previously, the company had to run separate and time-consuming Telnet sessions to remotely log in to the Unix servers to perform the same task.

With this announcement, NetManage joins a rapidly growing list of vendors that have recently announced Unix/NT interoperability and integration products. Those vendors include SoftWay Systems, DataFocus, Inc., Citrix Systems, Inc., Tektronix, Inc., Insignia Solutions, Inc. and SCO, Inc.

BUILDING BRIDGES

For PC-to-Unix connectivity, vendors are offering products to:

- Integrate file systems and directories
- Share and port applications
- Integrate mail and messaging systems
- Emulate Unix applications on PCs and vice versa
- Access legacy applications from Web-enabled PC clients

Products from companies such as those let users retain their investments in Unix while quickly tapping in to the advantages of Windows NT — such as its lower cost of ownership, easier manageability and relatively large base of office productivity software, observers said [CW, April 21].

CONNECTIVITY SOFTWARE

TECHNOLOGY ADVANTAGES

For example, DataFocus' Nutcracker suite and SoftWay's OpenNT software let users port Unix applications to NT while maintaining a single code base. And technologies from Citrix and Insignia let users access Windows office productivity applications from their Unix workstations.

"There are a lot of levels at which Windows NT and Unix can be integrated," said Jean Bozman, an analyst at International Data Corp. in Mountain View, Calif. "It is a complicated problem, and users are probably going to pick and choose the level of integration they want" from a palette of choices

NetManage's UnixLink 97 software is among the first in the industry to support the X Consortium and X Open Group's "Broadway" technology to enable X applications to run over the Internet. A Drop-in X-server lets users launch and display Unix clients from within a Web browser. And a Custom Setup Builder in UnixLink 97 lets network administrators customize installation and administration procedures.□

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Apple demo to offer Rhapsody prelude

▶ *Developers to preview next Mac OS at conference this week*

By Lisa Picarille

MACINTOSH USERS will be paying close attention to developers' reactions this week as they preview Apple Computer, Inc.'s next-generation Macintosh operating system.

Rhapsody, based on the technology Apple acquired in its buyout of Next Software, Inc., is the main thrust of Apple's two-pronged operating system strategy. Apple also plans to continue upgrading its existing Mac OS.

Users said that to consider moving to Rhapsody, there must be a healthy crop of software applications that take advantage of Rhapsody's new features. Those include memory protection for improved system reliability and preemptive multitasking for increased processor performance.

The availability of third-party applications will ultimately help users formulate plans for their options, which include sticking with the current Mac OS, moving to Rhapsody or considering another operating environment.

Apple will provide WWDC attendees with the latest version of the OpenStep operating system and WebObjects, a Web site-creation tool to help entice programmers to write applications for Rhapsody.

LINCHPIN

The glimpse of Rhapsody is expected to be the highlight of Apple's Worldwide Developers Conference (WWDC) in San Jose, Calif. It is seen as crucial for Apple, as the beleaguered company scurries to maintain the loyalty of Macintosh users and promote the development of new Macintosh software applications.

Mike Anderson, director of computer systems at TRW Systems Integration Group in Sunnyvale, Calif., said his company recently standardized on Windows. He said he will use the developers conference to survey the state of Apple and gauge developer commitment to Rhapsody. Anderson's group has more than 1,500 Macintoshes and 600 Wintel PCs.

"We are not fighting [TRW's] Wintel standard, but right now we are not complying with it," Anderson said. "We need to see what's out there to determine how long we can go without complying. The only way to do that is to have a desktop operating system that is as robust as what is offered on the PC side."

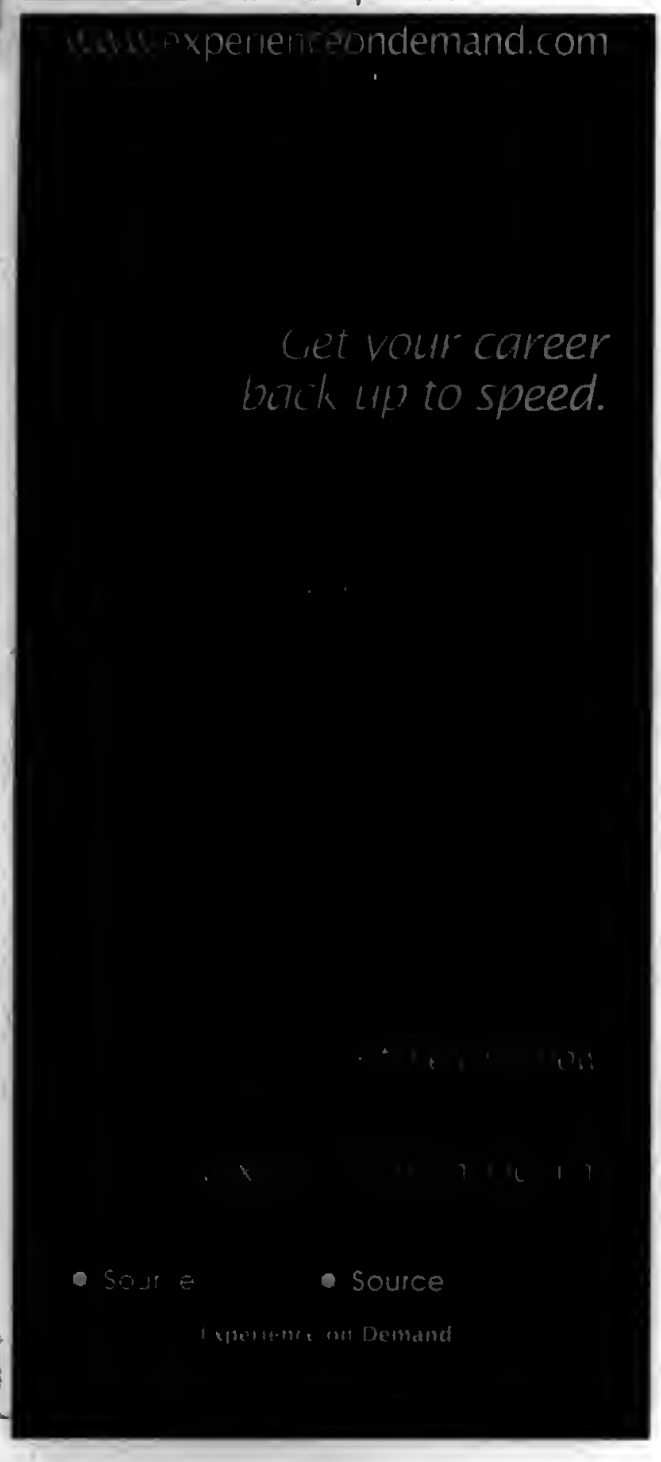
The developer release of Rhapsody is due out this summer. The final version is scheduled to ship to users in mid-1998.

The road to Rhapsody is paved with another major release of the Mac OS. At a recent conference in San Diego, Apple demonstrated a preliminary release of its Mac OS 8 operating system, which sports a revamped user interface and enhanced Internet features.

Also known as System 8 and code-named Tempo, the release is expected to include Apple's recently announced Personal Web Sharing feature, which lets any Macintosh become an intranet server for a small network. Tempo, due out this summer, will also sport a reworked interface designed to reduce desktop clutter.

Anderson's group at TRW is beta-testing Tempo. He applauded its improved stability, which could delay his move to Rhapsody.

"Our machines have been more stable, and we are very happy with the beta. It's a big step in the right direction," Anderson said. □



Oracle tool ties apps to the Web

CONTINUED FROM PAGE 47

Michael Brando, engineering manager at San Jose, Calif.-based PE Nelson, said being able to move his applications to the Web will greatly increase his sales potential. PE Nelson is a division of laboratory instrument maker Perkin-Elmer Corp.

SALES BOOSTER

By using Oracle's Web-enabled tool, "we'll be able to put the applications in places we normally wouldn't be able to go," Brando said.

"I've been able to take my Oracle-built applications and run them to the Web with essentially no changes."
– Doug Lhotka, Resort Computer

He said a petroleum company customer, for example, might want to use a network computer on an oil dock to access data via a Web browser. "They have employees who aren't trained in computing or have oil in their hands. But they can spend $300 to $500 to put a [network computer] out there. If we can run [our applications] over the Internet, that dramatically broadens our market," he said.

Karen Boucher, director of The Standish Group International, Inc. in Dennis, Mass., said Oracle made the right decision to rush the Web-enabled version of Developer 2000 at the cost of postponing Version 2.0. "Current users of Developer 2000 needed Web support right away," she said.

Doug Lhotka, research and development manager at Resort Computer Corp. in Lakewood, Colo., said the trade-off to get Version 1.4W was well worth it for his business, which builds software for the timeshare resort industry.

"I've been able to take my Oracle-built applications and run them to the Web with essentially no changes," he said. "If we were going to have to rewrite the application in Java, it would take about 75,000 hours. To convert it with Developer 2000, we have had to change a couple of fonts and a couple of windows sizes. We're saving at least 74,000 hours." □

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Briefs

LEARNING CURVE

Number of days it takes end users to become proficient with E-mail clients:

Lotus Notes	85
Novell GroupWise	55
Microsoft Exchange	46

Basis: 103 organizations with an average of 3,000 users

Getting directories in order

▶ Groupware links will help build central information banks

By Barb Cole-Gomolski

USERS OF Lotus Development Corp.'s Domino may not have to look further than their messaging and groupware server to build a central repository for user information.

Lotus this summer will release a revamped version of its Domino Directory Service. The company said the service will track user data — including telephone numbers, fax numbers and electronic-mail addresses — stored in Domino and other applications.

A central directory service provides a way to locate and identify users and resources on a network. In its simplest form, a directory service is like the white pages of a phone book.

Extending the reach of the Domino directory to non-Notes applications could be a cost-effective way for Notes shops to build an enterprisewide directory.

"A unified directory would be a big help," said Philip Setnik, a senior systems analyst at Master Builders, Inc. in Beachwood, Ohio. The manufacturer of concrete construction products has some user information stored in Notes and some stored in Novell, Inc.'s Novell Directory Services (NDS). Duplication of information is an issue, as is the fact that not all users have access to both the Notes and NDS directories. For example, remote users lack specific software needed to access NDS from the road, he said.

The new Domino directory will be included in a server up-

Directories, page 56

DOMINO AS A CENTRAL DIRECTORY

Pros:

- Supports LDAP
- Works with Notes middleware to cull information from other sources, including several databases
- Bidirectional replication with Novell Directory Services

Cons:

- Directory not available as a stand-alone product
- Unproven scalability as a central directory

NOTHING BUT NET

Bet-world/Interop '97

BOB WALLACE

VIVA LAS VSGAS?

Not if you're headed to the Networld/Interop '97 networking convention in the city Wayne Newton built.

The show is expanding faster than the national debt; organizers have taken to selling vendors "booth" space in the parking lot of the Las Vegas Convention Center because space inside is scarce.



Thousands of users, just like you, took off for glamorous Las Vegas, leaving envious colleagues to pick up the extra work and grouse about those lucky so-and-sos on a junket to Sin City.

So what's not to like? Plenty.

The success of the show has made transportation in the city a nightmare. You're about as likely to find a cab during rush hour as you are to win the lottery. It's almost as bad as Comdex, a show so big that empires have risen and fallen while people waited in cab lines.

And, as anyone who's ever been to Vegas can attest, it's nearly impossible to find even a restaurant that isn't packed with one-armed bandits. There's no escaping the ringing, clanking, whistling din of the slots, and it can be deafening.

You could write a Harvard Business School case study on the marketing and advertising of major shows such as Networld/Interop. Everything is sponsored and covered with logos, right down to cab receipts. The good news is that means a new wardrobe of "vendorwear" and trinkets for the kids. The bad news is the marketing folks who hold you down to force it on you.

GOTTA HAVE HYPE

And the hype! There are more revolutionary new products at the show than there are slot machines in the city — at least to hear your average exhibitor tell it. Hint to vendors: Adding a port or protocol doesn't make a commodity product revolutionary. It usually means you're just keeping up with the crowd.

Hint to users: Rest up before you hit the show floor — it resembles a circus on steroids. It isn't recommended for those with an aversion to crowds.

Wallace, page 56

Fast dial-up options piling up

By Mindy Blodgett

USERS WHO WANT relief from cybercrawl may get more options as 56K bit/sec. modem vendors pursue mobile and corporate workers.

Industry observers expect a vast market of corporate and home users will turn to 56K bit/sec. modem technology rather than grapple with technologies such as Integrated Services Digital Network (ISDN), which isn't available in many areas and is difficult to install.

56K MODEMS

For example, Laura Tyler, a spokeswoman for Epoch Internet, Inc., an Internet service provider in Irvine, Calif., said the company has progressed beyond trials and last week began offering 56K bit/sec. service.

NATIONWIDE LAUNCH

"We are launching nationwide, and we expect a lot of customers, both consumers and corporate, will sign on," Tyler said. "We are done with the trials, and we think 56K works great."

Lucent Technologies, Inc. last week took aim at mobile workers with a 56K bit/sec. chip set designed for notebooks.

Lucent officials said they are shipping samples of the Mars set to notebook makers such as Toshiba America Information Systems, Inc. in Irvine.

Two other companies, Linksys in Irvine and TDK Systems, Inc. in Nevada City, Calif., have announced PC Card modems for mobile users that use 56K bit/sec. technology.

GOOD LINES NEEDED

However, Kieran Taylor, an analyst at TeleChoice, Inc. in Verona, N.J., said 56K bit/sec. modems for notebooks are unlikely to be of much help to the true road warrior.

"What you need for these modems to work is good phone lines," Taylor said. "We all know how hard it is to get good phone connections from hotels, for instance. And unless you are downloading really graphical images on a notebook, you don't really need those speeds."

In other developments, several companies recently announced 56K bit/sec. products for corporate networks. Some were displayed at Networld/Interop '97 last week in Las Vegas. Vendors that offer 56K bit/sec. technology bundled into their remote access hardware products include Ascend Communications, Inc. in Alameda, Calif., and Ariel Corp. in Cranbury, N.J.

Those products have more potential, Taylor said.

56K modems, page 56

ATTO TECHNOLOGY, INC. has announced SCSI Sidekick, an Ultra SCSI, operating-system-independent device that combines a SCSI signal converter, bus extender and bus isolator in a single unit.

According to the Amherst, N.Y., company, Sidekick allows a single host adapter to communicate with a combination of single-ended and differential SCSI devices on the SCSI bus with no performance degradation.

Pricing starts at $295.

ATTO Technology
(716) 691-1999
www.attotech.com

MARCAN, INC. has announced Alchemy CAD2CD software for organizing and storing AutoCAD drawings on low-cost CD-Recordable media.

According to the Bellevue, Wash., company, documents can be retrieved from CD based on any data contained in the files. It runs on 16- and 32-bit Windows systems.

Pricing starts at $995.

Marcan
(800)635-7477
www.marcan.com

XEROX CORP. has announced DocuPrint C55, a color laser printer for networked office workgroups.

According to the Rochester, N.Y., company, the C55 includes ImageFix to correct for low-quality and poorly scanned images.



Xerox's DocuPrint C55

It is the first of a series of Xerox printers embedded with a World Wide Web server to provide easy installation and access via the Internet to printer drivers, software, supplies and service information.

Pricing starts at $3,995.

Xerox
(716) 425-5230
www.xerox.com

XCD, INC. has announced XConnect 100 Select, a print server that can support 100Base-TX and 10Base-T networks.

According to the Tustin, Calif., company, the product simultaneously supports printing from Novell, Inc. NetWare, TCP/IP, Windows NT, Windows 95 peer-to-peer, IBM OS/2 Warp Server and Apple Computer, Inc. AppleTalk networks. Up to four printers are supported via its two bidirectional parallel ports and two serial ports.

XConnect 100 Select costs $445.

XCD
(714) 573-7055
www.xcd.com

FUJI PHOTO FILM USA, INC. has announced the Fujifilm M Drive to allow PC users to access, share, download and print microfilm documents directly from the PC.

According to the Elmsford, N.Y., company, the product replaces two separate devices in the conventional method of retrieving microfilm: a reader-printer device and a workstation.



Fuji Photo Film USA's M Drive

The M Drive centralizes the microfilm retrieval on a single peripheral device connected to the PC.

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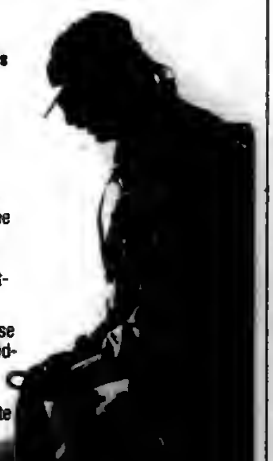
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The point? Every individual on your team has an idea of their career plan, and knitting these plans together can benefit corporate goals. Think about your current team today. Do individual career plans in your organization seamlessly benefit from available projects? Training resources? Corporate goals? Is this information connected to cost-effectively reskill and retain staff? It's all possible with CareerAgent, where management and staff can collaborate to continuously develop a career "itinerary" for each individual. On the Internet or your intranet. Your choice.

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NETWORLD/INTEROP '97

So much stuff, so little time

By Laura DiDio
LAS VEGAS

WITH MORE THAN 1,400 exhibitors crowding the Las Vegas Convention Center, there is no way for most Networld/Interop '97 attendees to see everything.

Instead, many focus on checking out the technology that can be most useful to their businesses in the short term.

"I go to the show with a checklist to see only those selected products that will minimize my management tasks," said an information systems manager at a New York brokerage firm, who requested anonymity. "A good chunk of my time is devoted to attending seminars."

The floor last week was crowded with new products, including network management, security and Internet-enabling products for the major network operating systems: Novell, Inc. NetWare, Microsoft Corp. Windows NT and IBM OS/2 Warp.

IBM's entry in the ease-of-use category was Software Choice, a World Wide Web-based support and maintenance program that makes it easier for customers to get the latest OS/2 Warp 4 and OS/2 Warp Server features and updates via the Internet.

Users who are members of IBM's Workstation Software Advantage support program can visit the Software Choice Web site at www.software.ibm.com/os2warp. There, they can choose from a catalog of downloadable features and updates. Many are free, IBM executives said.

Options include Java Version 1.02 and Netscape Communications Corp.'s Navigator Version 2.02. Also, Warp Server customers can access several Windows client support options, including the Network Logon for Windows 95 and Windows NT clients.

NETWORK MANAGEMENT

On the network management front, BMC Software, Inc. in Houston demonstrated its Patrol Knowledge Module for NetWare. The add-on facility lets administrators view 150 different statistics and bits of configuration data on NetWare servers. Administrators can then use the information to adjust operating system functions for peak performance. The software gives administrators a central view of the enterprise across NetWare, Unix and Windows NT environments.

BMC's Patrol Knowledge Module is shipping now. Pricing starts at $4,500 for managing up to five NetWare servers.

For Windows users, Frontier Technologies Corp. in Mequon, Wis., introduced E-Lock, an application that lets users create secure and manageable intranet and Internet-based applications on Windows NT and Windows 95 machines. E-Lock provides a standards-based programmable interface that lets businesses integrate secure digital signatures and certificates into new and existing applications.

The product line includes the E-Certificate Issuing System Software Version 1.1, which costs $799; the E-Secure Document Signer Version 1.1, which costs $99; and the Secure E-Mail Version 1.1, which costs $49 per seat. All will ship at the end of this month.

Ariel Corp. in Cranbury, N.J., addressed the growing market for Windows NT remote access products with the introduction of its Rascal RS 1000 series device. Rascal combines 24 Rockwell Semiconductor Systems 56K bit/sec. modems with a T1 Primary Rate Interface on a pair of Industry Standard Architecture bus cards. That turnkey package gives users a Plug and Play device to add remote access capabilities to Windows NT servers.

Rascal costs $9,600 and will ship in the third quarter. □

56K modem options

CONTINUED FROM PAGE 53

"A lot of companies don't want to cope with such technologies as ISDN," Taylor said. "For them, 56K makes sense."

Other 56K bit/sec. developments include the following:

■Ariel announced last week that its Rascal remote access hardware will include 24 56K bit/sec. modems as well as interfaces to T1 and ISDN Primary Rate Interface connections.

●Ascend recently announced that its Max 4048, a fixed-port remote access hardware product, will allow users to upgrade to 56K bit/sec. technology. The Max 4048 costs $26,400.

■Microcom, Inc. in Norwood, Mass., recently announced that its ISPorte rack-mount modem chassis will have 56K bit/aec. capabilities this summer. □

MORE ON MODEMS

Some recent developments in 56K bit/sec. modem technology for notebooks:

- Lucent Technologies last week introduced a modem chip set with an integrated PCI bus interface.
- Lucent's chip set operates on 3.3V of power, consuming nearly 40% less power than the 5V modem chips on the market.
- TDK announced it will upgrade 33.6K bit/sec. modem users to 56K bit/sec.

Wallace: Bet-world/Interop

CONTINUED FROM PAGE 53

Everyone's got a demo that you just have to see. Watch out for the snares and leg-hold traps that the more aggressive exhibitors use to drag showgoers into their booths. Most demos are interesting only when they fail, and you can watch the marketing folks squirm.

A smart show attendee is a well-armed one. Collect free umbrellas and yardsticks. Use them to poke vendors who won't take no for an answer.

And contact with vendors doesn't really end when the show floor closes. Most vendors hold cocktail parties at happening night spots. That means free food, drinks and entertainment, but it also means a healthy dose of propaganda, in case you didn't get enough during the day.

If you end up at one of those parties, do what you can to make the vendors uneasy. Mention aloud how you're moving from their products to those of an archrival. Point out how others are planning to follow your lead. Watching vendors sweat can be more entertaining than Wayne or Siegfried and Roy.

HELP!

But most people don't go to trade shows for trinkets or free food. Most go to find help from vendors or other users in solving some thorny business-process problem.

Sadly, rather than finding the key technology or bit of information that will unlock the puzzle, most attendees have, after a day on the floor, only a vendor-sponsored carry bag full of press kits — and a massive headache.

And the folks back at the office thought you were having the time of your life. □

Wallace is Computerworld's senior editor, internetworking. His Internet address is robert_wallace@cw.com.

AT&T speeds up trans-Atlantic ISDN

AT&T CORP. and Mercury Communications Ltd. have upped the speed at which they can transport data across the ocean to 1.536M bit/sec. on their trans-Atlantic Integrated Services Digital Network (ISDN) service.

The two carriers are aiming their T1-speed service at companies that experience demand for a lot of bandwidth.

Although the companies claim that the service is cheaper than installing a point-to-point private circuit, users will still need to purchase a Primary Rate Interface.

In the U.S., the service will be part of AT&T's Global ISDN Service. — *IDG News Service*

Directories to get links

CONTINUED FROM PAGE 53

grade, called Domino 4.7, and will support Lightweight Directory Access Protocol (LDAP) as a means of culling directory information from various sources.

This summer, Lotus will give Notes clients the ability to read information from LDAP-compatible directories, such as Netscape Communications Corp.'s Directory Server.

By the fourth quarter, the company plans to add the ability to write to LDAP directories, so users can update their own information using Notes clients or LDAP-compliant World Wide Web browsers.

Lotus also will add to the Domino Directory Service the ability to share information with NDS, recognize and use digital certificates that conform to the X.509 standard and exchange data with clients using Secure Sockets Layer encryption. In addition, the company will add LDAP support to its NotesPump middleware, which gleans data from several database sources.

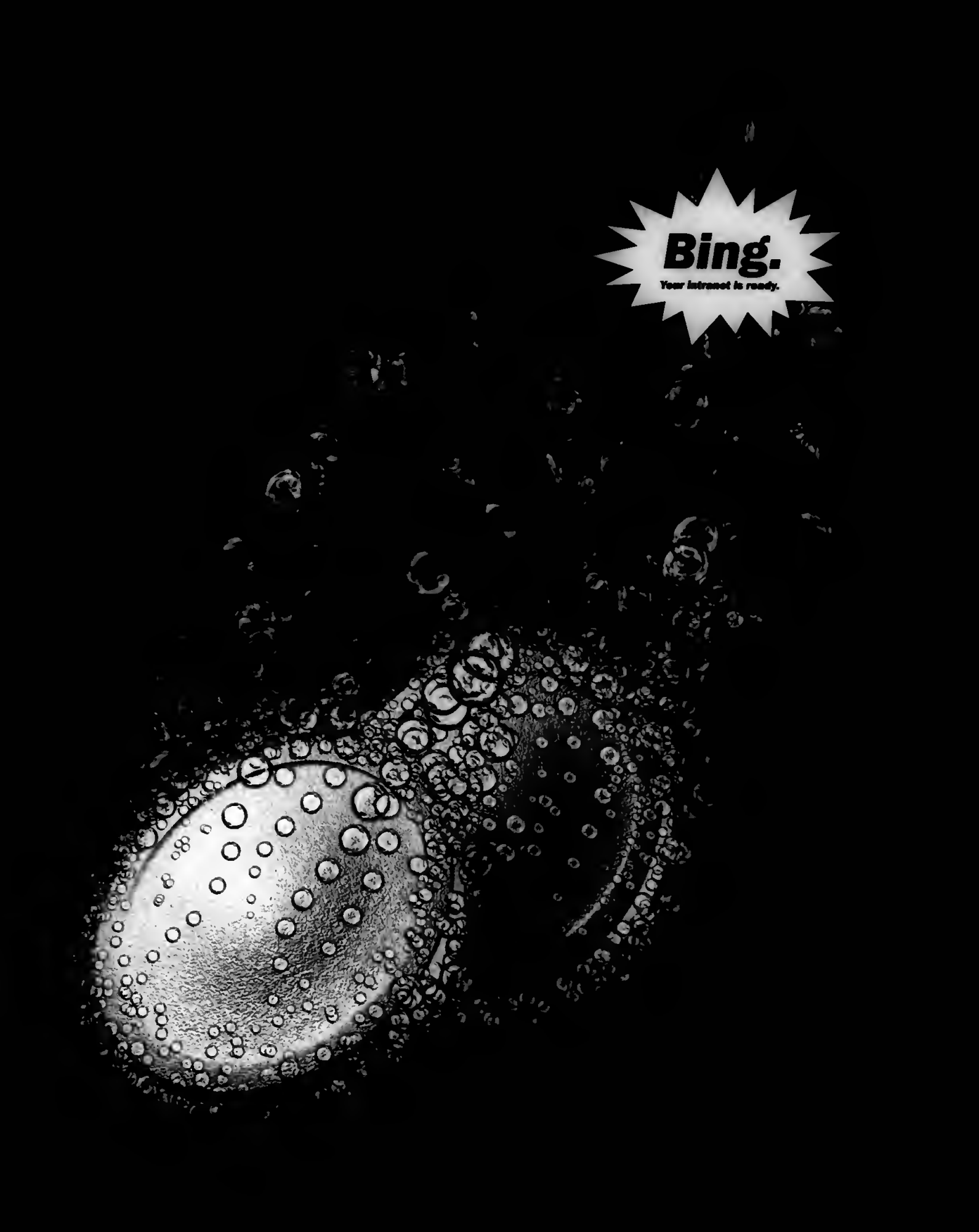
The idea of using Domino Directory Service to gather corporatewide directory data is feasible to Notes users, but questions loom.

"Our main concern would be scalability," said a LAN manager at an agricultural company that uses Notes, who requested anonymity. Several thousand workers at the company use Banyan Systems, Inc.'s StreetTalk directory. "Nothing [besides StreetTalk] that we've looked at seems to scale well" for more than 5,000 to 10,000 users, he said.

NEEDS PROOF

Tim Crawford, a technical project manager at National Semiconductor Corp. in Santa Clara, Calif., said he isn't convinced that the company should store all its directory information in Domino.

The semiconductor maker is writing its own Domino-based application to cull information into a centralized LDAP directory. Separately, it also is considering NDS and Microsoft's unreleased Active Directory. "We have NDS deployed already, but it has been too hard to get data in and out," Crawford said. He said he wouldn't consider deploying Active Directory in its first release. Microsoft will add it to a version of Windows NT Server due next year. □


Bing.
Your intranet is ready.

Well, that was fast.

Right now, today, with Microsoft® Windows NT® Server you can set up an intranet that will meet or exceed the expectations of even the most starry-eyed technophiles. Here's how quickly it can happen:

First, you install a Windows NT Server into your existing environment. This is easy because Windows NT will run on a whole bunch of different hardware, and it'll plug in next to a NetWare or UNIX server with no disruption to normal life.

Once you've installed Windows NT Server, you have also installed a very powerful Web server—Internet Information Server. IIS is built into Windows NT and contains all the tools you need to build your intranet (or your Web site, for that matter). And you're done.

Needless to say, you've still got plenty of work to do figuring out just what you want your intranet to do, what you want it to say, how you want it to look, and little details like that. But at least the technology won't be slowing you down.

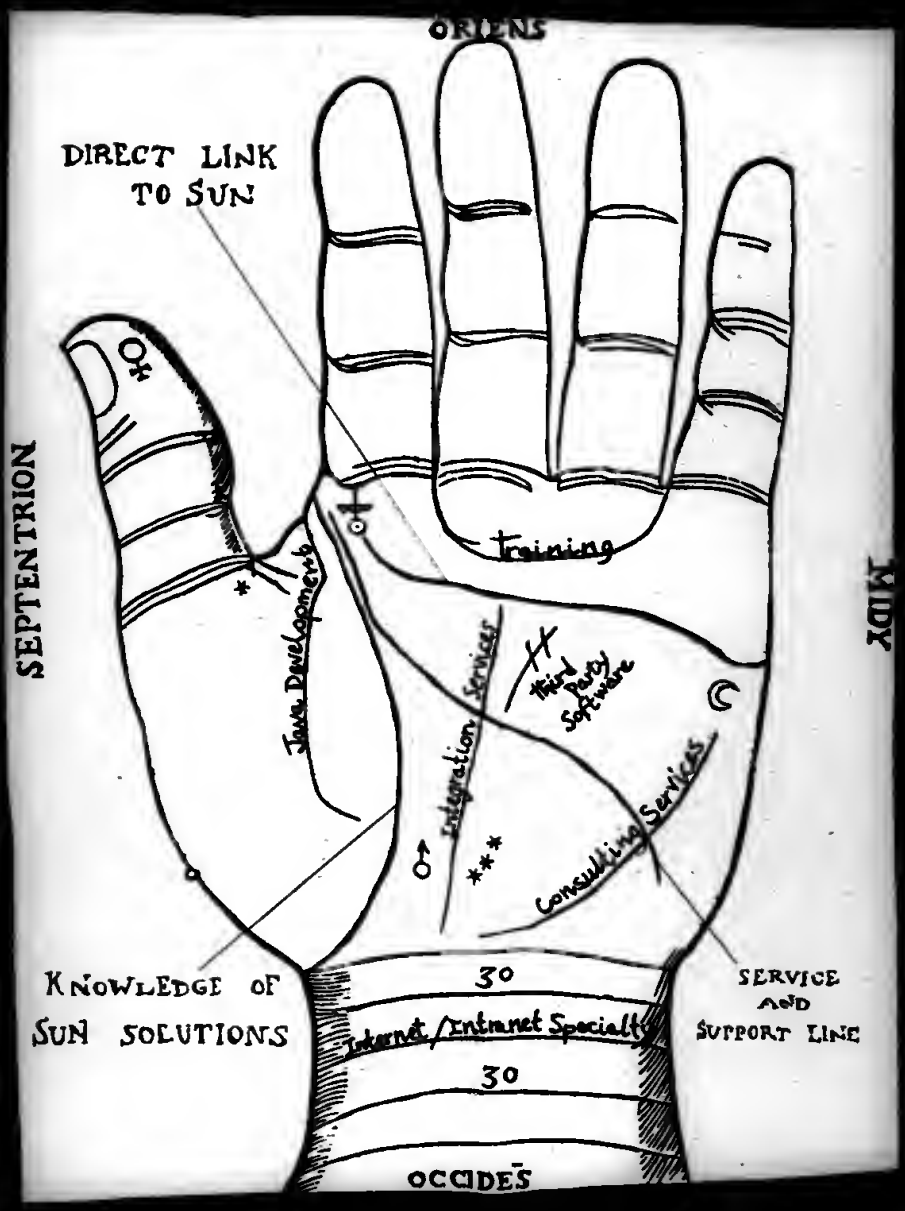
What makes IIS so cool? *Consider Active Server pages—an open, extensible application environment where you can combine HTML, scripts and ActiveX™ components. Consider NetShow™ for multimedia streaming. Consider FrontPage™ for one-button Web publishing. These are just some of the IIS features that let you do cool stuff you couldn't do before—now your site is more interactive, more dynamic and smarter.*



What about three months from now? *Say you've built your intranet and now you think, "That's good, but I really wish it also did ____." Well, there's a Microsoft BackOffice™ server for your every need—online commerce, database integration with Web sites, Web site management—you name it. And as new technologies are invented, you'll find them built into new BackOffice servers.*

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Your future lies in the palm of their hand.



Sun

VALUE ADDED RESELLER

THE NETWORK IS THE COMPUTER

Sun

Briefs

According to Gartner Group, Inc., by the year 2002, 80% of companies with sales force automation systems will use the Internet for unassisted selling systems. With unassisted selling, customers place orders and gather information through the World Wide Web, not sales representatives.

Intranet replaces CAD apps

▶ *Truck manufacturing firm turns to browser application to share vector graphics files*



By Justin Hibbard

EMPLOYEES AT Freightliner Corp. are about to say good riddance to the plotter.

The rickety old device takes up to five minutes to print engineering drawings by dragging pens over paper. Workers throughout the truck manufacturing company need to look at the drawings, but they can't view them online without expensive computer-aided design (CAD) software.

Until now, that is. Freightliner is rolling out an intranet application that will let workers view technical drawings — called vector graphics — inside a World Wide Web browser.

New plug-in applications make it possible for Web browsers to display vector graphics stored in the Computer Graphics Metafile (CGM) format, which is gaining support as a standard for distributing technical drawings on the Internet and intranets.

CGM, which is endorsed by the International Standards Organization, is a 10-year-old file format CAD vendors agreed to use as a generic way to pass two-dimensional diagrams among incompatible CAD applications, according to Harry Fenik, an analyst at Zona Research, Inc. in Redwood City, Calif.

But it is too expensive to give

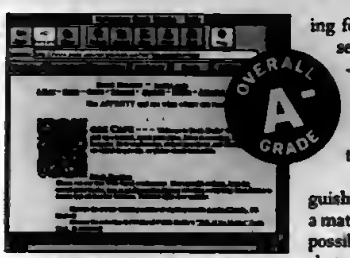
Intranet, page 63

Online booksellers are on the right page

By Gary H. Anthes

RECENTLY IN these pages, I had the unpleasant task of reviewing online car rental sites, which ranged from fair to breathtakingly awful. I am happy to report that booksellers have done a much better job with their World Wide Web services.

The three retail book sites I reviewed were attractive, relatively easy to use and mostly free of bugs. In each case I was able to find and order four test books online: a fiction and a nonfiction best-seller, a dictionary and a technical book about the Internet.



Book Stacks' Book Cafe lets you chat with other users on a variety of topics

The sites varied considerably in the size of their inventories. If you are looking for something obscure or out of print, go to Amazon.com, Inc.'s huge online catalog. But if you are looking for standard items or best-sellers — as in my test case — go where you find the lowest price. Prices varied, but no site offered consistently better or worse deals than the other sites.

Beyond that, what distinguished the services was mostly a matter of bells and whistles — possibly useful things such as chat rooms, book news, reviews and the like.

Ordering was pretty simple, but searching was a problem. All the search engines were quirky and produced inexplainable results at times. If you don't find what you are looking for the first time, vary the words in your

Online booksellers, page 64

INTERNET COMMERCE

Web firms eye suit on link policies

By Mitch Wagner

A LAWSUIT BY Ticketmaster Corp. against Microsoft Corp. is only the most recent, most high-profile conflict in a standing controversy over who can link to a commercial site on the World Wide Web.

The disputes pit commercial interests — firms protecting their intellectual property — against traditional Internet values that encourage the free flow of information online.

Commercial sites say they aren't trying to prevent links, they just don't like the way some sites seem to acquire information — and sell advertising to go along with it — in the course of building links.



Microsoft feels it can appropriate information without compensation

One recent case involves Total News, Inc. in Phoenix, which was sued in February by several big news companies, including the Washington Post Co., Cable News Network, Inc. and Reuters Ltd. Total News (www.totalnews.com) is a directory of online news services. The plaintiffs said Total News used framing to cover up the other sites' ads with Total News' own ads. That generally makes it appear that the other site's content was Total News' own, plaintiffs said.

"The Total News lawsuit is not just about linking. It's about linking, framing and selling content in the margins of the frame against our content," said Bruce Keller, attorney for the plaintiffs. "Their frames cover up part of their content that's

Web firms, page 63

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Feels like a floppy drive.
Works like a floppy drive.

(A 120 megabyte floppy drive.)



LS-120 technology.
The first high capacity storage system compatible with 3.5" diskettes



LS 120

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Web firms eye suit

CONTINUED FROM PAGE 61

visible to our users. They're using our content to sell ads without our permission."

Total News denies the allegations. Company officials said the news site doesn't permanently cover up the target sites' ads because users can still scroll up and down in stories and see the ads — or even use the site in a browser such as America Online, Inc.'s that doesn't support frames and therefore doesn't obscure ads. And Total News said it doesn't claim credit for others' work; on the contrary, the site specifically states it is linking to others' sites.

"This is a matter of big companies trying to control how people view information on the Internet," said Total News President Roman Godzich. "The Internet is getting to be a scary place."

The litigants are currently in settlement negotiations, Godzich said. As part of those negotiations, Total News no longer shows most of the plaintiffs' sites inside frames. Instead, Total News launches a new browser window when users click on a link to one of the plaintiffs' sites from inside Total News.

In another case, two community newspapers in Scotland are involved in a lawsuit over links. The Shetland Times Ltd. sued the Shetland News, saying links between the News' site and the main headline page of the Times make it appear that the News created the articles and robs the Times of ad revenue. A judge in October granted an "interim interdict," blocking the links temporarily pending a full hearing on the case.

Observers said the Ticketmaster/Microsoft lawsuit is the first filed over links between two large companies with the wherewithal to litigate to the end. Earlier this month, Ticketmaster filed a lawsuit against Microsoft over links in Microsoft's Seattle Sidewalk (seattle.sidewalk.com) community directory that linked to pages deep within the Ticketmaster site, rather than to the home page at www.ticketmaster.com.

That encouraged visitors to bypass Ticketmaster's ads, information and marketing data, the suit alleged.

BYPASSED ADS

"Microsoft apparently feels it can appropriate information without any compensation," said Alan Citron, senior vice president for multimedia at Ticketmaster. "Here's an area where Microsoft is selling advertising and making it possible for customers to bypass our advertising."

Microsoft denies any wrongdoing. Company officials said that it is simply following standard operating procedure for the Web, which encourages promiscuous links between sites to increase traffic.

"Why on Earth would Ticketmaster block customers? It's a head-scratcher to us," said Frank Schott, general manager of Sidewalk at Microsoft. □

Roadblocks and warring windows used by dueling Web site operators

Users who object to links from other Web sites to their own can often turn to technology to set up a roadblock. But site administrators said the solution is often unsatisfactory.

In the latest development in Ticketmaster's efforts to block links from a Microsoft site, Ticketmaster installed software blocks on its site that present an error message to users who try to link to Ticketmaster from Microsoft's site.

However, that doesn't solve Ticketmaster's problem, said Alan Citron, senior vice president for multimedia at Ticketmaster.

"The problem is that they still haven't said to us that they understand our position," Citron said. "We have to assume that each time they launch a site they'll put in the same deep links to our site, and then we'll have to find them and block them. That's not a solution."

At least one national news organization briefly used the same approach to break links from Total News.

For a time, the Cable News Network used JavaScript code that blocked Total News' frames from appearing over CNN material. Instead, the code launched the CNN site in a separate window for users coming in from the Total News site, said Total News President Roman Godzich.

Godzich said Total News countered by developing code that would launch yet a third browser window — a very small one — to sit in front of the CNN browser window and instruct users to click to return to Total News.

Total News removed the code for the third window as part of ongoing settlement negotiations, Godzich said.

CNN declined to comment.

— Mitch Wagner

NEW PRODUCTS

TRAVELING SOFTWARE, INC. has announced WebEx 2.0 for Windows 95/NT 4.0, an off-line World Wide Web browser.

According to the Bothell, Wash., company, a business traveler can use WebEx to download a Web site to a laptop hard drive, then bring up the stored site while off-line, such as while on a plane. WebEx allows keyword searches through the downloaded sites.

WebEx costs $59.95.

Traveling Software
(206) 483-8088
www.travsoft.com

VISUAL NUMERICS, INC. has announced JWave 1.0, a Java-based visual data-analysis tool for use with the Internet and intranets.

According to the Houston company, application developers can use JWave to create Java programs that generate two-dimensional plots, surfaces, animations and other graphical data. It also supports real-time collaboration. It costs $3,395.

Visual Numerics
(303) 530-9329
www.vni.com

LATITUDE COMMUNICATIONS has announced the MeetingPlace WebPublisher 97 software component for the MeetingPlace voice conference server.

According to the Santa Clara, Calif., company, the software will integrate the conference server with a company's intranet or Internet World Wide Web sites. It adds a Web browser option to telephone, Windows, Macintosh and electronic-mail interfaces for scheduling conferences. Pricing starts at $4,995.

Latitude Communications
(408) 988-7200
www.latitude.com

DATA CODE, INC. has announced Cycore, a software product line that allows a company's World Wide Web browser to function as a common interface to the central marketing database.

According to the Orlando, Fla., company, the software's LeadNet and LeadNet Plus versions allow sales leads and marketing information to be published over the Web to key corporate personnel. Components include the server, lead publishing system and Web browser access. Pricing starts at $35,000 for LeadNet and $45,000 for LeadNet Plus.

Data Code
(407) 351-3019
www.datacode.com

MANAGEMENT SCIENCE ASSOCIATES, INC. has announced BusinessWeb Publisher, a publishing add-on to the company's BusinessWeb decision-support tool.

According to the Pittsburgh company, BusinessWeb Publisher enables users to have active reports and graphic objects delivered directly to their Netscape Communications Corp. Communicator in-box at intervals defined by the user.

Pricing starts at $12,500.

Management Science Associates
(412) 362-2078
www.msa.com

KINETIX has announced 3D Studio Vis design software for architects, engineers and other designers.

According to the San Francisco company, 3D Studio Vis uses animation features that were developed for special-effects artists and animators.

It integrates with AutoCAD, a design tool from Kinetix's parent firm, Autodesk, Inc. 3D Studio Vis can read and write industry-standard file formats.

Pricing starts at $1,995.

Kinetix
(800) 879-4233
www.ktx.com

Intranet replaces CAD apps

CONTINUED FROM PAGE 61

all 4,000 users at Freightliner CAD software to view the files.

A basic Unix workstation loaded with CAD software costs about $10,000.

"At corporate, we have a real need to display drawings in costing, purchasing, after market, all across the company," said Larry Baldridge, systems development director at Freightliner. "We couldn't afford to put CAD on all desktops."

Instead, the company chose an ActiveX control called the ActiveCGM Browser from InterCAP Graphics Systems, Inc. in Annapolis, Md. The control runs inside Microsoft Corp.'s Internet Explorer browser and displays CGM files stored on Web servers. Ematek GmbH in Germany makes a similar product called MetaWeb, which is available from Henderson Software, Inc. in Boulder, Colo.

Because ActiveCGM is available only for Windows 95 and Windows NT, departments at Freightliner that want to use the control will have to upgrade their PCs to those operating systems at their own expense, Baldridge said. Excluding PC upgrades, the total cost of Freightliner's intranet application was $70,000.

"The biggest cost was putting the data in the CGM store," Baldridge said.

The problem was that Freightliner's engineers use CAD software that produces graphics in the Hewlett-Packard Graphics Language (HPGL), not CGM. So the company had to write a custom application that passes HPGL graphics through a conversion utility called Hpa2Design Professional from Tailor Made Software Ltd. in Loveland, Ohio, and creates CGM files.

"We couldn't afford to put CAD on all the desktops."
– Larry Baldridge, Freightliner

TIME-SAVER

Making the CGM files available to anyone with a PC will cut the time spent waiting for the plotter to scribble its drawings, said Jim Bosworth, a group leader for industrial engineering in the parts distribution department at Freightliner.

"We'll get the information faster," he said. "A lot of times, we just need to get an idea of what a part looks like. We don't necessarily need to see a hard-copy print. It will save paper." □

Online booksellers are on the right page

CONTINUED FROM PAGE 61

search or choose a different search option and try again.

Two biggies — Barnes & Noble, Inc. and Borders Books and Music — don't have an Internet presence but said they will have Web sites soon. Barnes & Noble offers online ordering on America Online.

ONLINE BOOKSELLERS – HOW THEY STACK UP

	Book Stacks	WordsWorth	Amazon.com
URL			
NUMBER OF TITLES			
DISCOUNT CLAIMED			
CAN SEARCH ON			
PREREGISTRATION AND PASSWORD REQUIRED			
PERFORMANCE (SPEED)			
OVERALL EASE OF USE			
OVERALL GRADE	A-	C	B

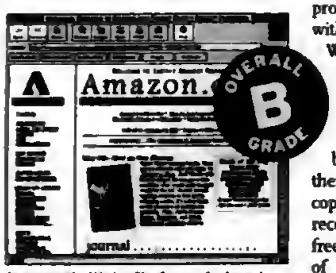
AMAZON.COM

The most elaborate and best-known of the book-selling Web sites, Amazon.com calls itself "Earth's Biggest Bookstore." It offers access to some 2.5 million titles stored in publishers' warehouses. About 1 million of the titles are out of print.

Its Web site was varied and rich, yet easy to navigate. It had some neat features such as its "Eyes" service, which automatically sends you electronic mail when books are published on your favorite subjects or by your favorite authors.

Performance varied from poor to good, depending on the time of day. On weekday afternoons, Amazon.com was much slower than the other two services.

Amazon.com had the most advanced search options of any of the sites, something you may need if you are looking for that old, out-of-print book with the title you can't quite remember.



Amazon's Web site is varied and rich, yet easy to navigate

But the search engine had its share of quirks. For example, a search for the title *7 Habits of Highly Effective People* produced just one hit, for an audio cassette with that title. But when I substituted "seven" for "7" in my request, I got several hits on cassettes and books, beginning with both "7" and "seven" — but not the cassette from the first search.

BOOK STACKS UNLIMITED, INC.

Book Stacks offered a generally excellent site. Navigation was fast and easy, the look was clean and logical, and ordering was simple. It was one of the few Web sites I've ever visited where I never once lost my way.

A "Book Cafe" allows you to chat with other users on a variety of topics. One chat room is devoted to Agatha Christie fans, for example, and another is for computer enthusiasts. One prominent thread dealt with users' views on which Windows 95 book was best.

Books Stacks offers access to free electronic books, or "E-books," which are either old classics free of copyright restrictions or recent titles distributed free with the permission of the author. Just one glitch here: The search engine for E-books didn't work.

And searching for printed books by title was chancy. If a single word was wrong or missing, even an "of" or "and," the search engine found nothing. Searching by keyword worked better.

WORDSWORTH BOOKS

WordsWorth is the Web site for a real bookstore. At present the site has 125,000 titles online, the same ones you'd find at its Cambridge, Mass., retail outlet. But the company said it will soon offer access to some 2.6 million titles at publishers' warehouses, just as Amazon.com does.

WordsWorth isn't quite as convenient as Book Stacks, because it fails to prominently display buttons for the major functions at the top of the home page. In fact, I had to click on "help" to find out how to place an order. Most of the home page is given over to special promotions, book signings, online interviews with authors and the like.

Nothing on the site says anything about how to change or cancel an order, but when I sent WordsWorth E-mail to cancel an order placed the previous day, that did work.

WordsWorth's search engine allowed searches by author and title only. And it worked in strange ways. When I searched for "habits highly effective people," it missed the seemingly obvious *The 7 Habits of Highly Effective People*, but retrieved such titles as *Habits of the Heart* and *Hackers & the Ant*.

As part of an upgrade that could happen as early as this week, WordsWorth's search capabilities will be considerably improved, store officials said. □

Internet lacks content for women

▸ *Survey says fewer total users than other studies*

By Elizabeth Heichler

A SURVEY OF U.S. Internet use has found that the number of adult users — about 31 million — is significantly lower than the 40 million users estimated by other surveys.

The number drops to 27.7 million users when you eliminate people who use the Internet only for electronic mail, said Find/SVP, Inc.'s Emerging Technologies Research Group last week. The survey was conducted from February to April among 1,000 Internet users and 1,000 nonusers. The research shows there are about 9 million Americans, mostly women, who have tried the Internet but aren't current users.

Men continue to dominate the online population, at 17.8 million users; 9.9 million cyberdenizens are women. This indicates a continued lack of female-oriented content on the World Wide Web, the researchers said.

"The Web will not be a mass-market medium until we see parity between men and women," said Peter Clemente, director at Find/SVP in New York.

Another obstacle to mass-market acceptance of the Internet is ease of use.

NO PLUG-AND-PLAY

"It's clear that the Internet is not yet plug and play," said Thomas Miller, Find/SVP vice president. Fifty-seven percent of current users find it "very easy" to use, but 41% find the Internet "somewhat difficult," and 2% said it was "very difficult."

There are about 55 million people in the U.S. poised to become Internet users, researchers said. Thirteen percent of nonusers said they plan to begin using the Internet in the next 12 months, while 21% would like to learn more about it. Forty-one percent said they had no need for the Internet, and 26% weren't familiar with it.

The survey also demonstrated that in the competition for people's time, the Internet is gaining not only on other media, such as television and newspapers, but also on other PC applications, Miller said.

"There's a redefinition of the computer from a productivity tool to an information-access tool," Miller said. Sixteen percent of survey respondents said that their use of other PC applications had declined in favor of the Internet.

The majority of both men and women said news topped their list of content preferences. Travel, hobbies and health followed in that order for women; men went for hobbies, travel and entertainment information.

Those who do business on the Web can take heart. Twenty-seven percent of current users made online purchases in the past 12 months, according to the survey.

Of those purchasers, 39% bought something after clicking on an advertisement. □

Heichler writes for the IDG News Service in Boston.

ALR is only No.3.
So why pick our servers?

"

U.S. Market Share: Pentium Pro CPU

No.1

No.2

No.3

Source: IDC - December, 1996*

"Performance"

WORLD

APRIL 14, 1997 VOLUME 19, ISSUE 15 *Founded in 1978*

▶ Server

ALR Revolution 6x6 packs a punch

By Brooks Talley

THE ALR REVOLUTION 6x6 is a pretty amazing machine Advanced Logic Research has always had good server designs, but in the past they were about even with Compaq's or Hewlett-Packard's efforts. The Revolution 6x6 puts the company ahead by offering more compelling features and upgradability while remaining in the same price range. This is the must-buy for any IS department that wants a high degree of fault tolerance and scalability without paying top dollar for it. And what IS department wouldn't?

As with its predecessor, the Revolution Quad 6, Revolution 6x6's most prominent feature is ALR's touch-sensitive LCD, dubbed InforManager. InforManager gives a visual and audible alert for out-of-bounds conditions in the power supplies, fans, and temperatures.

Of course, no one wants to hang out in the server closet watching an LCD, so InforManager's statistics are also available via software, both locally and remotely. InforManagers remote-management piece can handle as many a 1,024 servers—a limitation ALR would happily address if you'd care to buy more than 1,024 of these things.

Because the guts of the Revolution 6x6 are based on two processor cards, each having as many as three processors, I looked at the server configured with three, four, and six processors. This let me look at a fully configured one-card system, a four-CPU system that's comparable to competitors' offerings, and a maxed-out system. I found very impressive scalability all the way around, a testament to the clever approach ALR took with the machine.

The Revolution 6x6 is based on the same 450GX chip set (previously known as Orion) as competitors' four-CPU offerings. The reason everyone else is shipping four-CPU systems is the chip set's 2-bit CPU addressing scheme, which allows for four-CPU IDs. ALR has implemented two sets of three CPUs; the missing fourth CPU in each set is actually a stand-in for the other entire group. The Pentium Pro's round-robin multitasking approach is preserved, and the four-CPU limit is broken.

The machine that I tested was configured with a whopping 1GB of RAM and 10 2GB ultra-SCSI drives in a RAID array. More modestly configured units are priced starting at $13,675 — an excellent price for a single-processor server configured with 128MB of RAM and 9GB SCSI drive, especially considering upgradability to six processors.

I tested the Revolution 6x6 using a database benchmark, with 50 clients distributed across three 10Base-T segments. When I moved from three CPUs to four, performance improved 31 percent. When I moved from four CPUs to six, performance jumped another 34 percent. Although that falls short of ideal scalability, it's still an extra 34 percent at practically no cost.

The Revolution 6x6 may not offer bulletproof fault tolerance, but it offers a lot: The power supply has two AC plugs, which can be plugged into different circuits, and the power supply actually comprises four modules; three are live, and one is a hot spare.

Additional fault tolerance is provided by the Active CPU feature, which automatically shuts down an out-of-spec CPU, reconfigures the machine to not use the CPU, and then automatically reboots. Although CPU failures are fairly rare, the fan or Voltage Regulator Module, called VRM, could also contribute to a CPU's demise.

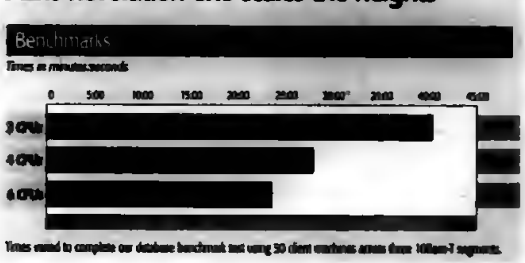
My only complaint with this splendid piece of hardware is that if you buy it with less than its full complement of processors, ALR's add-in processor prices are astronomical — about twice what you pay for the same chip at a local VAR.

On the whole, this is the best server I've seen for less than $50,000. If you want a super-high-end, multiprocessing, fault-tolerant, room-size server, look to Tricord or NetFrame. Otherwise, buy this server — now.



THIS MONSTER *of a box has six 200-MHz Pentium Pro processors, 1GB of RAM, 10 2GB hot-swappable ultra-SCSI drives, three Channel RAID controllers, seven PCI slots, four EISA slots, one PCI/EISA slot, and a 16X CD-ROM drive.*

ALR's Revolution 6x6 scales the heights



Times round to complete our database benchmark test using 50 client workstations across three 10Base-T segments.

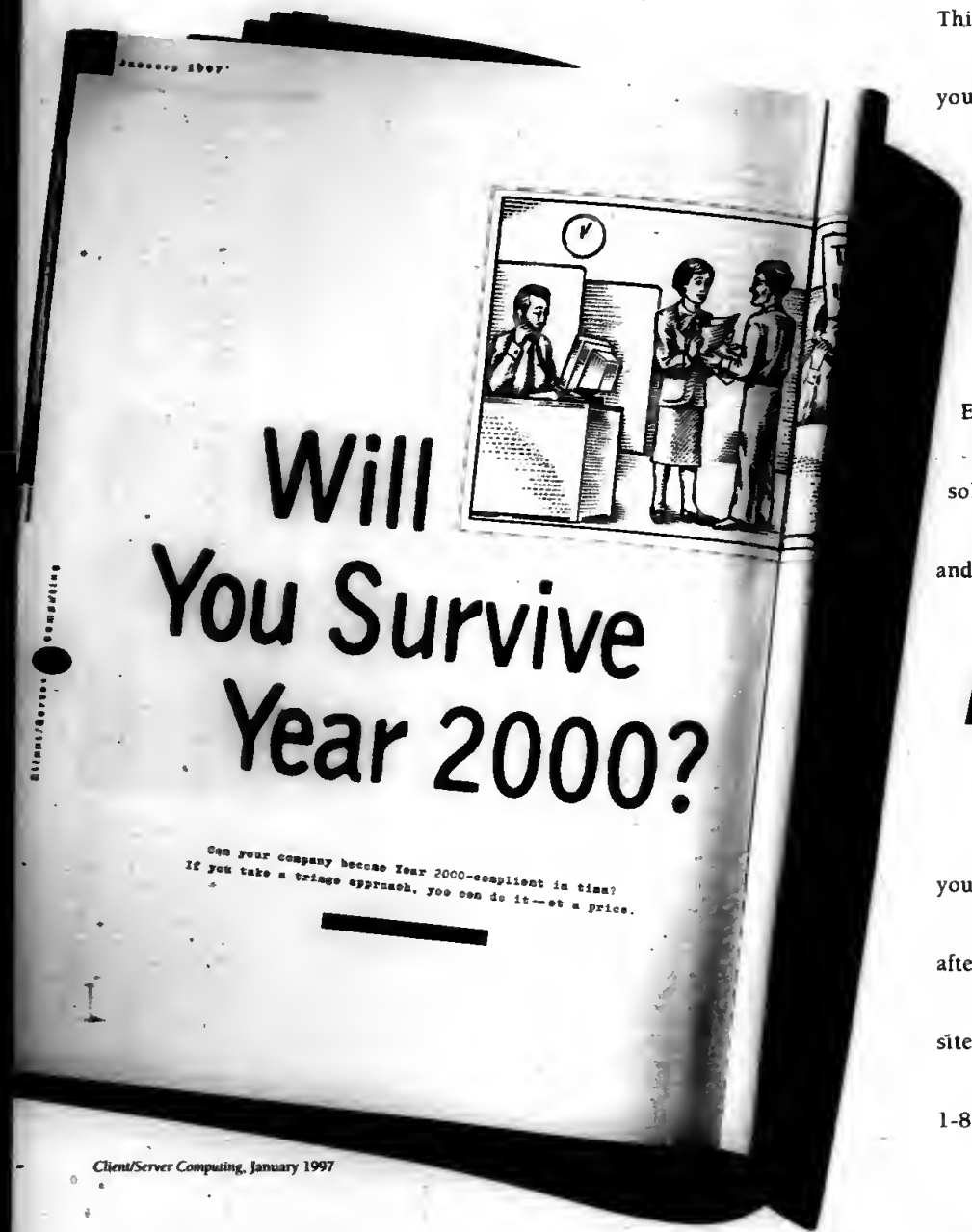
Brooks Talley is InfoWorld Test Center's associate technical manager. Send e-mail to brooks_talley@infoworld.com. Additional testing by Technology Analyst Yun Wang (yun_wang@infoworld.com)



Inside the box storage and Memory

1-800-

Year 2000, a.k.a. The Immovable Deadline. It could cost millions in man-hours and lost revenues. Unless you have EMC Enterprise Storage.™ Because EMC Enterprise Storage helps you become Year 2000 compliant without protracted business interruptions. Our solutions can maintain completely separate production and test data simultaneously. This will allow you to validate your Year 2000 solution with real information, without putting your business at risk. To find out how EMC Enterprise Storage can help solve the biggest IT crisis ever and upgrade the performance of your entire system during and after the project, visit our Web site at www.emc.com or call 1-800-424-EMC2, ext. 363.



Client/Server Computing, January 1997

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Corporate Strategies

Briefs

WHERE DO THEY GO?

Most companies don't have defined career paths for help desk employees. When staffers leave support, this is where they typically go:

Noncompeting company	38.3%
Network management	36.9%
Programming	33.2%
Competing company	28.8%
Non-IS departments within the company	26.7%
Computer operations	18.7%
Retirement	8.7%

Base: 745 companies; multiple responses allowed

Source: Help Desk Institute, Colorado Springs

Coffee roaster perks up software system

▸ *Underdog's IS risk tied to business goal*

By Randy Weston
WATERBURY, VT.

WHEN YOU ARE A David of a company like Green Mountain Coffee, Inc. trying to take on a Goliath like Starbucks Corp., it may seem a bit risky to bet your business on an untried software system.

But that's what 16-year-old Green Mountain Roasters did when it chose to base the expansion of its wholesale and retail coffee sales business on PeopleSoft, Inc.'s new manufacturing module as well as PeopleSoft's human resource and financial applications.

"We are betting on [PeopleSoft's] history as much as anything," said Jim Prevo, chief information officer at the $38 million coffee roasting company. "PeopleSoft has an excellent human resources module. Then it got into financials with an excellent financials package. [The company has] a tradition of getting into something and doing it right."

Green Mountain hopes the new system will give the com-

Coffee roaster, page 69

Looking for a new job? Watch your behavior

▸ *Interviewers ask for more than just the facts*

By Julia King

YOU GRADUATED from one of the best university computer science programs and have five years of experience in C++ and Powersoft's PowerBuilder applications. Maybe you even managed a project or two at your former company.

It's all right there on your resume. So why is this hiring manager asking you how you got out of an embarrassing social jam and what you did when you realized you couldn't keep a commitment you had made?

That kind of questioning is part of behavioral interviewing, an increasingly popular employee screening technique designed to more accurately match the right high-tech candidates with the right jobs.

The idea: The better the job fit, the lower the staff turnover. That's a major concern for employers across all industries, given today's tight information services skills market.

"More traditional skills interviews ask for just the facts, but in getting the facts, you aren't able to evaluate anything else," said Rob Lake, employment manager at Advanced Micro Devices Corp., a chip manufacturer in Sunnyvale, Calif.

"But ask someone about their biggest weakness and what they did to overcome it, and you can find out how open someone is to change and growth," Lake said.

Behavior, page 69



Agency reaps millions from overhaul

By Sharon Machlis

THE WORKERS' Compensation Board of Ontario said it is generating an extra $7 million per year in revenue from overhauling an ancient computer system that could process incoming funds only once per year.

Finally.

The current Revenue Strategy Environment for Tomorrow (Reset) system was the third try at modernizing the board's old batch processing arrangement, which needed up to four days simply to register a new employer.

"The previous effort suffered from scope creep. They were trying to do too much," said project leader Jason Wilson.

Overhaul, page 69

Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

CSC launches unit

Computer Sciences Corp. (CSC) in El Segundo, Calif., has launched a financial services unit to support its customers across the insurance, banking and investment industries. The financial services group, which is projecting $1.5 billion in sales for fiscal 1997, will be headed by Thomas R. Madison, who previously presided over CSC's global outsourcing unit in Falls Church, Va. The financial services group, with 7,500 employees worldwide, will be based in Austin, Texas.

Home banking on TV

Satellite television company British Sky Broadcasting PLC has launched a joint venture worth $1 billion that will offer U.K. consumers interactive services such as home banking and Internet access via a television set-top box.

The new company, called British Interactive Broadcasting, would subsidize the costs of building the "black-box" decoders. The boxes would handle 200 channels of digital television and offer Internet access and online content aimed at home shopping and banking.

Users would pay about $325 for a box.

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Behavior, page 69



Cambridge Technology's Sara Wescott [illegible] for team players [illegible] interviewing employees

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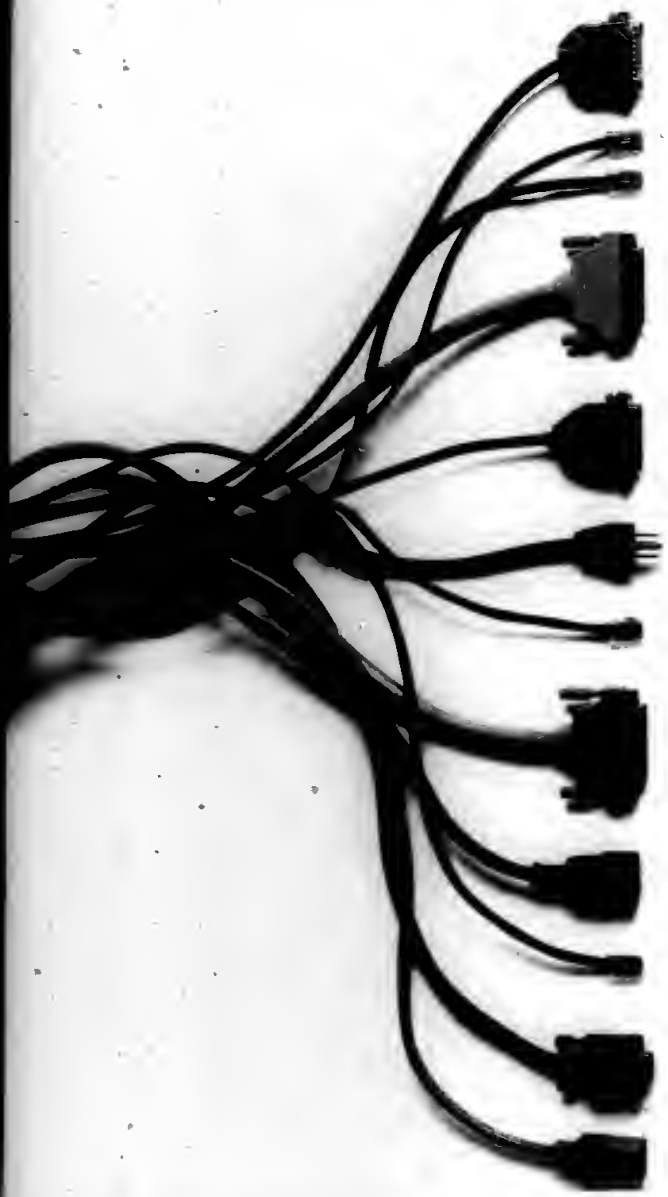
Overhaul, page 69

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Coffee roaster takes an IS risk

CONTINUED FROM PAGE 67

pany a corporatewide view of its operations and let it exercise tighter control from headquarters of its inveotory at remote warehouses.

PeopleSoft, in Pleasanton, Calif., in December released its manufacturing system with the PeopleSoft 6 application package. Most of the leading enterprise resource-planning software vendors, including SAP AG, Oracle Corp. and The Baan Co., have long had manufacturing modules. The industry will be watching Green Mountain to see whether it can successfully tackle such a project and whether PeopleSoft can dent this software market.

"These kinds of accounts are important to PeopleSoft," said Tom Gormley, a senior analyst at Forrester Research, Inc. in Cambridge, Mass. "If they get live reference sites, [PeopleSoft] can point to someone out there who is actually using this stuff."

Green Mountain isn't scheduled to go live with the PeopleSoft software until June, but Prevo said his company is happy with it so far.

"This is like a moon shot," he said. "You can't shoot for where the moon is today. You have to shoot for where it is going to be when you get there."

TAKING A CHANCE

It may not be a conventional approach, but then no one ever accused Vermonters of being conventional. Just look at the success Green Mountain's neighbor Ben & Jerry's had taking a nontraditional approach to the ice cream industry. The two hippie friends who founded Ben & Jerry's Homemade, Inc. turned a love of ice cream and Grateful Dead music into a multimillion-dollar ice cream empire.

Green Mountain, which is located about a mile from Ben & Jerry's headquarters in Waterbury, hopes to follow in its neighbor's rather large footsteps. But that couldn't happen with the legacy DOS-based order-management system the company has been using.

Among other things, the system wouldn't allow Green Mountain officials to keep a corporate-level view of finances and inventory at its five warehouses around the Northeast.

"The real key is keeping our inventory down in the remote warehouses," said Andy Gordoo, inventory controller at Green Mountain. "Right now, it's guesswork with inventory at our regional operating centers. When PeopleSoft comes, we will know what we have."

MADE TO FIT

Prevo said the main reason PeopleSoft won Green Mountain's contract was it had a better tool set than other offerings. PeopleSoft designed its systems to fit about 80% of a company's business processes, and it provides the tools to customize the other 20%. Baan is still developing such a tool set, and SAP's R/3 system doesn't allow for such tailoring.

It was an important factor because Green Mountain officials knew that no matter what they chose, the system would have to be modified to fit the company's needs such as keeping track of delivery truck routes. No packaged systems had such functionality.

But PeopleSoft had its problems. Most significant, the vendor couldn't provide Green Mountain with any knowledgeable systems implementers, because of a talent shortage.

PeopleSoft also had demanded that Green Mountain send each of its information systems staff members for up to 105 days of training at several out-of-state training centers.

Prevo's office instead chose an outside consultant, Strategic Information Group, Inc., in San Jose, Calif., which sent Green Mountain's personnel through extensive training on the PeopleSoft product.

All told, Green Mountain is spending about $1.5 million during the life of the two-year project. That includes infrastructure upgrades and consulting fees. The cost is about 25% more than original estimates, mainly because of the company's customization and training needs.

But Prevo said having the company's chief financial officer deeply involved in the selection and configuration of the new system has helped justify those costs. □

Behavior

CONTINUED FROM PAGE 67

AT&T Corp.'s Business Markets Division used behavioral interviews to fill most of its 80 information systems positions in Orlando, Fla. Working with The Hay Group, an IS management and human resources consultancy in Jersey City, N.J., it first developed a profile of desirable employee behaviors and traits. Those included a strong customer orientation and the ability to work on teams.

Candidates were then asked questions designed to elicit information about those traits. During her interview, Diane Berry, a project manager, was asked to recall a particularly unpleasant job situation and how she dealt with it.

"They wanted to elicit whether I stormed in and demanded to have things done my way," Berry said.

YOU CAN BE FRANK

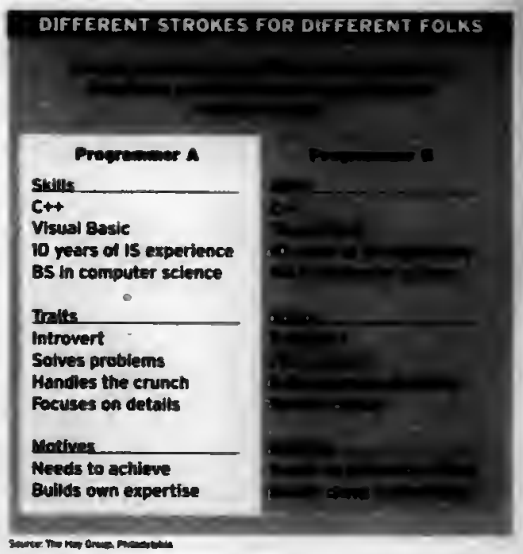
"The questions really make you think. It's also difficult to schmooze somebody because they ask things in such a way that it's easy to be candid and honest," Berry said.

Cambridge Technology Partners, a systems integration firm in Cambridge, Mass., screens candidates specifically for their ability to work on teams, which are a cornerstone of the company's culture.

"I ask [candidates] a lot of experience-based questions. I'm looking for team experience, and how they answer is very important," said Sarah Wescott, a project manager at Cambridge Technology.

One tipoff: Wescott said she listens for how many times a candidate says "I" as opposed to "we" when he describes a past project or accomplishment.

Advanced Micro's Lake, meanwhile, verifies that candidates are being honest about who they are and how they behave by asking the same question several different ways. "That way, if you get two to three different answers, you know they're hosing you," he said. □



Source: The Hay Group, Philadelphia

Overhaul reaps millions

CONTINUED FROM PAGE 67

Similar charges have been leveled at some U.S. government programs, such as the Internal Revenue Service's Tax Modernization System plan.

The Toronto-based agency, which collects $2.5 billion Canadian (U.S. $1.81 billion) worth of employment premiums annually, turned its efforts around with two important steps: chopping Reset into pieces, and establishing a change-management and testing program for portions of the project.

The latest effort carved up the program's goals into two separate releases, Wilson said.

Release 1, finished in July 1995, focused on streamlining the process of adding employers to the system; turnaround was cut from four days to one. Release 2 dealt with how the board assesses and collects workers' compensation premiums from Ontario employers, letting companies pay monthly, quarterly or once per year.

Before, companies had to pay annually — depriving the board of millions of dollars in interest income. And once-per-year reconciliation took up to two weeks. "Now, the year-end takes three or four hours to do the same amount of work," Wilson said.

There have been several other recent Reset updates. For example, board employees can tap in to data online to answer employers' telephone queries instead of having to run batch reports.

NO MANUAL ENTRY

Overall, the board estimates a fivefold boost in processing efficiency without increasing staff, in part through the use of scanning and optical character recognition instead of manual data entry.

Wilson instituted change-management controls for developing, testing and updating the massive application. He said he believes that was key to the program's success.

Before those controls, programmers often disagreed on which version was correct and sometimes overwrote one another's source code. Wilson used Change Man and X:Change from Serena Software International in Burlingame, Calif., to help oversee Reset, which dealt with about 20 separate legacy applications at the compensation board.

The system was developed on a PC-based LAN using computer-aided software engineering tools. The Key:Enterprise package from Sterling Software, Inc. in Dallas helped generate the data dictionary and Cobol source code for specifications and business maps. Code was compiled on PCs, tested and debugged, then exported and compiled on an IBM mainframe.

There were two levels of unit testing, two levels of system testing and four levels of user-acceptance testing before the project went live.

"It was the first time this organization has done anything of this scope on change management. It was a bit of a risk," Wilson said. "But it worked. I'm still here."

His reward for finishing the project on time? Wilson, 38, was recently named year 2000 director at the Canadian agency. □

HERE'S THE AN
THE QU

Since the way you use your network has changed dramatically, now is an excellent time to question its conventional design. Put simply, your rigid system isn't equipped to handle the fluid movement of intranet traffic, Internet access, and new applications that take advantage of both. Enter Adaptive Networking.

Adaptive Networking

Q: ALL RIGHT, WHAT IS IT?

Adaptive Networking is a set of products and cornerstone technologies that transition today's networks to the IP-optimized networks of tomorrow. The aim of Adaptive Networking is to build networks that are invisible to users, worry-free for network managers, and strategic for the business.

Q: WHAT DOES IT OFFER?

Our philosophy is centered around more services with less complexity. How? Through transparent scalable technologies that ensure long-term, non-disruptive network evolution; drive operational productivity at every level of the organization; and adapt to changes in network usage and business requirements.

Q: WHAT ARE THOSE SCALABLE TECHNOLOGIES?

Bay Networks products are being developed around industry-leading cornerstone technologies: Access, Switching, IP Services, and Network Management.

Q: WHAT ABOUT RELIABILITY?

When your network goes down, so does productivity. Not to worry. Adaptive networks are inherently more reliable and scalable thanks to symmetric multiprocessing and a distributed architecture. In other words, there's no single point of failure to bring down your network. Moreover, the system automatically reroutes traffic as needed to avoid bottlenecks. And you can easily add to, change, and modify your network without disrupting users. In fact, the network makes many adjustments all by itself.

Q: HOW CAN I REDUCE NETWORK OWNERSHIP COSTS?

A good question, considering that administering and managing your network likely consumes the bnlk of your IT budget. Adaptive networks automatically find and configure

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SWER. WHAT'S ESTION?

new devices. Which, coincidentally, saves your IT staff considerable time. And thanks to our Autosensing Technology, the system determines which users have 10Mbps or 100Mbps capabilities, for example, and matches them with the bandwidth they need.

Q • HOW CAN WE AVOID • SURPRISES?

With Optivity®, your IT staff can proactively manage all the devices in your network as one cohesive system—even if it extends across the Internet. Optivity also provides the powerful ability to visualize and analyze real-time traffic flow across your entire network. Intelligent agents monitor your network infrastructure, keeping your IT staff informed of changing conditions and often making adjustments as needed to ensure the overall health of your network. What's more, Optivity includes analytical tools for capacity planning to help reduce budget surprises.

Q • WILL IT WORK WITH • WHAT I'VE ALREADY GOT?

Of course. It wouldn't be truly adaptive if it didn't. You can adopt this technology at your own pace in cost-justifiable increments. Adaptive Networking even makes our competitors' products smarter and faster. Good news, since you probably already own some.

Q • CAN IT GIVE MY • BUSINESS A COMPETITIVE EDGE?

Definitely. You can offer hot, new services and build closer links with customers and business partners. Should they need access to your corporate network from the Internet, you can offer secure, virtual private network connections. Want to add voice-over-IP capabilities to link customers and service representatives from your Web site and reduce long-distance phone costs? Adaptive Networking can do this and much more.

Q • WILL IT WORK • WITH THE LATEST APPLICATIONS?

Applications drive your network needs. That's why adaptive networks shift on the fly to match routing priorities to your applications. For example, financial transactions and video conferencing can take routing priority over e-mail packets and Web browsing.

Q • WHAT ABOUT ADDING • NEW CAPABILITIES?

With exciting, new advancements occurring daily, you'll want to add the latest capabilities as they arrive. Equally important, you'll need to adopt them without ripping and replacing hardware. With Adaptive Networking, making these changes is a simple software upgrade.

ANY QUESTIONS?

If your network can't do all of this, maybe it's time to start asking a few questions of your own. Like "How soon can I put Adaptive Networking to work for my business?" For a free strategy paper, visit www.baynetworks.com/adapt/a3 or call 1-800-8-BAYNET ext. 294. Adaptive Networking is exactly what your business needs. Without question.



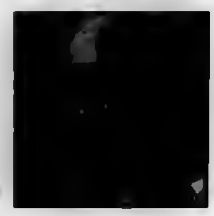
Bay Networks

PAUL STRASSMANN

THROUGH BUDGET SESSIONS LOOM AHEAD.

Computer budgets tend to rise above long-term budget averages when profits increase, and they

WARNING: 1998 BUDGET CUTS AHEAD



dip if profits decrease. With credible predictions of a downturn in 1998 profits beginning to emerge, CIOs should brace themselves for tough times.

I pay attention to the economic forecasts issued by the investment banking firm of Morgan Stanley, one of the foremost financiers of U.S. computer firms.

In a March 21 research report titled "PC Saturation?" chief economist Stephen Roach writes that next year's profits for U.S. corporations are expected to decrease by 2.5%.

That's the first time in eight years that we can expect a broad decline in profits. It follows a long period of prosperity when profit growth averaged more than 3% per year. Mounting competitive pressures from excess global capacity will keep prices down, and increased productivity won't compensate for inflation.

Furthermore, Roach says he expects the U.S. Gross Domestic Product growth to decline from 3.1% this year to only 1.9% next year. Roach concluded that, therefore, a period of stagnation in information technology spending is likely.

THE STOCK MARKET AS A PREDICTOR

The Morningstar organization, the foremost compiler of statistics about mutual fund performance, has just updated its quarterly indicators about gains by all domestic stocks and U.S. IT stocks. I compared these patterns and found an amazing correlation: When the stock market increases even slightly, the technology stocks shoot up. When the stock market dips even slightly, the technology stocks take a dive.

For instance, when the market was up early in 1995 by 2%, IT stocks gained 13%. In the first quarter of this year, the market fell 2% and technology stocks plunged 13%. Investors seem to understand that whenever business suffers, computer budgets get squeezed.

IT BUDGET IMPLICATIONS

The good times are coming to an end, and it couldn't come at a worse time.

By and large, CIOs are accustomed to easy IT budget reviews and ample increases in funding. After all, most of them took their positions after the recession that ended in 1992.

In the past three years, IT budgets have become encumbered with all sorts of ambitious ventures that depend on a steady increase in available dollars. It's unlikely that CIOs have put together contingency plans for when the budget crunch suddenly sets in.

CIOs will undoubtedly argue that a company can't afford to cut current operations and projects, such as year 2000 fixes, information security programs and highly visible programs.

That means 1998 budget reviews will start with all IT resources already oversubscribed. If austerity sets in, there may not be much funding available for new initiatives.

Later this year, everyone should prepare to see many projects canceled. Resumes may start circulating again, as happened during each of the five cyclical turns during the last 40 years of computerization.

PREPARING FOR A DOWNTURN

Many companies will seek easy solutions to the problem: Outsource the whole problem to someone who will promise a 20% cost reduction, or reshuffle the organization and bring in a new team that promises to somehow meet the new budget targets.

Stretching out schedules and postponing innovation will be by far the most frequent compromise in the negotiations for funds. That may be workable, but it will hurt IS's reputation to deliver on their promises.

My advice is to face budget adversity with an aggressive cost-reduction program.

The typical $200 million major corporate IT budget includes at least $40 million to maintain existing computer applications. Maintenance received very little attention in every organization I examined. With technology costs dropping at well over 20% per year, there's no reason why a smart CIO couldn't come prepared to fund development in a no-increase 1998 budget through savings on operations.

If IS management wishes to sustain its commitments while the IT budget remains level or declines, the best way to do so is to uncover savings in IS operations.

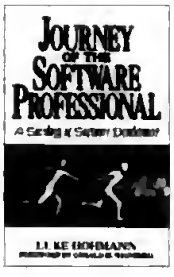
It's May, and there is still time to prepare a prudent cost-reduction plan, just in case that may be necessary.□

Paul Strassmann (www.strassmann.com) based the Corporate Information Management program of the U.S. Department of Defense on a policy of funding modernization investments from savings on operations.

RESOURCES IS MANAGER'S BOOKSHELF

Journey of the Software Professional: A Sociology of Software Development

By Luke Hohmann
Prentice Hall, Upper Saddle River, N.J.; 449 pages; $34.95 (hardcover)



Every software development department ought to have a copy of this book.

Hohmann, a physical therapist and former competitive figure skater-turned-software developer, may seem an unlikely author, but *Journey* is a book software developers can put to practical use. It's full of quick, specific advice on the whole spectrum of "people issues" and stages in software development: problem-solving, reviewing progress in a software project, understanding and managing different personality types, working on teams and developing trust.

This information is unusually well-presented.

Each chapter is divided into different topics, with "advice to managers" and "advice to developers" on each topic listed separately.

That, plus the adroit use of bold type, makes it easy to find and skim through Hohmann's suggestions.

The writing is clear, and the suggestions are often insightful or even provocative.

For example, Hohmann advises developers to use the future perfect tense when planning their projects and ask, "What will the system have done?" rather than ask, "What should the system do?"

Describing events as though they have already occurred helps developers do a better job of thinking through the software, he argues, and he suggests they use storyboards — as moviemakers do — to visualize the system.

In his "advice to managers," he advises that this technique be used to focus on the system's business impact.

TEXTBOOK STYLE

Hohmann sets out a theoretical framework for how programmers create software and organizes the book almost in textbook style.

Some may find it a useful analytical starting point and like the rigor of his reasoning.

But I think most readers will use it as a one-volume software developer's *Poor Richard's Almanac* — a place to turn to for advice or for launching a discussion.

You may not agree with all of the advice, but it will get you and your software development department to think.

— Allan E. Alter

SPECIAL REPORT JAVA

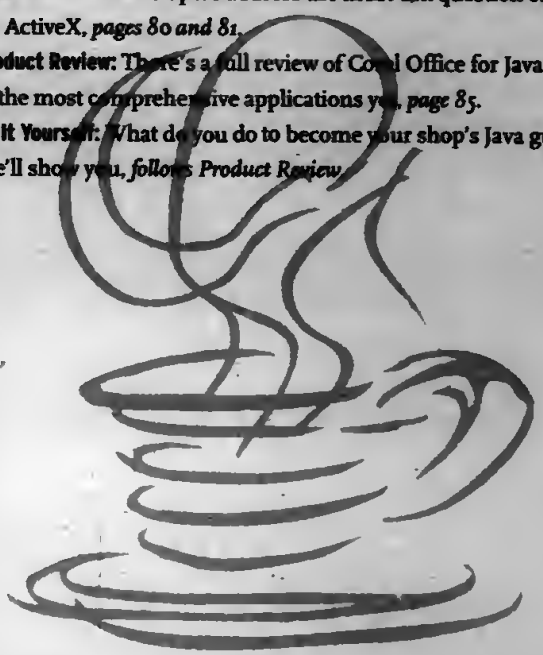
JavaOne was like a rock concert. When James Gosling took the stage at the Sun developers conference last month, people in the crowd stood and roared and pumped their fists. Later, they overpaid for denim jackets bearing the steaming-coffee logo. They howled at every Microsoft-stinks joke, no matter how predictable or nasty.

Java has momentum. You get the feeling Silicon Valley believes it has found the lever that can separate Microsoft's fingers from the purse strings of computing.

But your business is not a rock concert, and you could care less what Silicon Valley believes. It's one thing for a bunch of developers to take potshots at Microsoft; it's quite another for you to turn your back on C++ and start writing critical applications in an immature programming language whose performance and very future are in question.

That's where our Special Report comes in. We skip the hype and focus on the issues.

- **IS Overview:** We take a reality check on the outlook for corporate acceptance of Java in the immediate future, *page 74*.
- **Sound Off:** Two developers address the must-ask question of Java vs. ActiveX, *pages 80 and 81*.
- **Product Review:** There's a full review of Corel Office for Java, one of the most comprehensive applications yet, *page 85*.
- **Do It Yourself:** What do you do to become your shop's Java guru? We'll show you, *follows Product Review*.





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IS Overview

Managers aren't jumping for Java joy just yet

JURY'S Still

For many application developers, webmasters and information systems managers, Java is clearly "The Next Big Thing." It promises to cut the time it takes to develop applications for their business customers, on the theory that Java code can be easily created once, then run on almost any computer. Even better, many of the computers on which Java runs can be relatively low-cost and easy-to-maintain thin clients instead of complex, trouble-prone PCs.

That's the theory. In reality, Java isn't sweeping corporate America. A *Computerworld* survey of 100 IS managers reveals that only 20% are developing Java applications. Although some customers find Java easy to use, most are still waiting to see whether competing vendors can deliver a true, standard Java that can run on multiple hardware and operating system platforms. If the vendors "improve" their versions of Java with incompatible extensions, much of Java's key value will be lost. Customers also want vendors to fix nagging security and performance problems.

Here's a look at how Java is affecting the lives of IS managers today, as well as their hopes and fears for the future.

By Robert L. Scheier



MICHELLE ANDONIAN

GLOSSARY

Commonly used terms you should know if you ever want to get a Java job

By Karen D. Boucher, director of The Standish Group International, Inc.

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JAVA is really two things: 1. A language 2. More than a language.

Java the language: Some refer to it as C++++; some as Smalltalk you can't read. Java the language is object-oriented and interpreted. Unlike C++, Java supports only single inheritance. Java has features to deal with naming, security, garbage collection and performance.

But Java isn't just a language. It's also a portable operating system. Java programs compile to byte codes that can run on any

OUT

JAVA? NO THANKS

HOPE #1: A Cross-Platform Language

Java's cross-platform capabilities were the feature most often cited by IS managers now using Java. "It cuts your development time significantly," says Ed Boyd, web developer at Detroit Edison, Inc. "Now you no longer have to worry about compiling code for a specific platform, [because] the byte code will operate anywhere."

However, to use that Java byte code, a computer must be running a Java "virtual machine" that can interpret the byte code. As Boyd and other developers have found, vendors support different versions of Java and include subtle differences in their Java virtual machines. That can cause errors in how applications behave. For example, the placement of two buttons on a screen "may come out perfectly in one [browser], but the buttons may be butting against each other in another," Boyd says.

To Boyd, that problem can be easily solved by posting two versions of each Hypertext Markup Language page on the web server, downloading whichever will work best with the user's browser. Boyd is bullish on Java, and he says he hopes to deploy Java applications that let customers view their billing and payment histories over the World Wide Web by year's end.

That would save the utility money by reducing calls to its customer service center and let customers get their information without being put on hold.

But glitches in how information is displayed could be a life-or-death issue for Bill Stewart, vice president and chief information officer at Bethesda Healthcare System, a health care provider in Boynton Beach, Fla., which often transmits images such as X-rays to other health care providers.

Because they rely on such data to make treatment decisions, the clinics or doctors' offices must be sure the images are absolutely accurate. With the differences in how browsers will display the same image, "I am just not convinced [vendors] are going to solve some of the platform dependencies" that could affect the performance of such high-end applications, Stewart says.

According to Stewart, true cross-platform compatibility is particularly critical because Bethesda Healthcare has no control over what hardware is used by other health care providers with whom it shares data.

As a result of such concerns, Stewart has no plans to switch from C++ to Java as his preferred development language.

Cross-platform portability "isn't as seamless as people would lead you to believe," says Mark Smith, technical consultant at US Airways in Winston-Salem, N.C. His greatest fear is that if "Java turns into a language of proprietary extensions" so that code won't run the same on all platforms, it will lose some of its value.

A related problem is that Java applets tend to run slowly because they must be interpreted by the Java virtual machine. Sun Microsystems, Inc., the developer and chief backer of Java, has promised to tackle that problem with a new virtual machine by year's end. But some IS managers still aren't convinced.

"The major fear is that [Java] is not going to have the performance that's been promised, and it's going to fade away like a bad TV show."

Jury's still out, page 76

Java, schmava. I've got a business to run.

That's the prevailing attitude of Java skeptics such as Eric Duhon, senior vice president of technology at Consumer Credit Associates, Inc. in Houston.

Because his firm manages credit information, "we'd be one of the last people to try to ... distribute sensitive information over the Web," he says. Duhon's company uses Java only on the corporate home page, whose creation was outsourced.

That home page "looks nice, it's external, you pay for it once, and that's it, you're done," Duhon says, his voice dripping with scorn. More important systems decisions "are going to be based around the more core needs of the business, [rather] than the glossy needs."

But wouldn't Java's cross-platform capabilities make it easier to manage code? "We don't have that many people, [and] we aren't spread geographically," Duhon says. Besides, he says, "we don't fear developing new code" or maintaining what the company has, which was written using C or Oracle Corp.'s Developer and Designer 2000 development tools.

"I think there are great things about Java, but someone else is going to come around the corner very shortly with the next great thing," Duhon says.

Bill Stewart, vice president and CIO at Bethesda Healthcare, has seen trends such as Java come and go. He worries that vendors will port existing applications in Java rather than deliver long-promised products in languages they now support.

Stewart particularly mentions handheld computers for nurses. Vendors promised such devices "when the [information] systems were primarily driven off mainframes, then when we moved [to] midrange computers and now ... on client/server," he says, but still few effective handhelds have been deployed.

For the health care industry, the handhelds would be "a big productivity improvement" by reducing the need to rekey data, Stewart says. "But I'm still sitting here without the product. The time we've lost has really cost us in this industry." — Robert L. Scheier

---

operating system capable of accepting them (that is, any operating system that has an adapter). This Java Platform consists of Java Core Classes, the Java Virtual Machine and the Porting Interface.

JavaOS: Sun's is the only Java operating system that doesn't require an adapter to run Java objects. The JavaOS was designed for use in devices such as network computers and smart cards by embedding the JavaOS on microprocessors (JavaChips).

Java Remote Method Invocation (RMI): A simple interprocess protocol that provides services for the remote invocation of Java objects. Java RMI works for only Java applications and can't include objects or components created through other languages, such as C++.

JavaBeans: An extension of the existing Java object model that will provide capabilities similar to OLE ActiveX and OpenDoc parts.

Java applets without beans can be placed on Web pages, but they can't interact with other Java applets on the page. JavaBeans will let developers provide the linking and embedding functionality available from compound document architectures, such as OLE and OpenDoc.

Object, applet or component?

Easy to confuse. Here's what they are and how they interrelate:

Object: A stand-alone entity that consists of data and methods. The methods define the type of operations that can be performed on the data. A user tells an object to perform a method, thereby invoking an operation or series of operations on the enclosed data. This entity supports the object three: encapsulation, polymorphism and inheritance (see page 76).

Component: Similar to an object but lacks

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JURY'S still OUT

CONTINUED FROM PAGE 75

says Tom Kaminski, director of IS at Career Systems Development Corp., a Rochester, N.Y., firm that manages government training programs.

HOPE #2: A Safer Language

Any user who has lost valuable time because of a system crash knows how buggy PC software can be. Creating more stable applications, while not as dramatic as churning out "write-once, run-anywhere" code, is one of the main advantages some IS managers hope to get from Java.

"At least the theory is that Java applications are less naturally destructive" to system stability and easier to test than other languages such as C++ and C, says Norman Mainer, vice president and division manager of architecture and technologies at Wells Fargo Bank in San Francisco.

That's because Java doesn't use pointers, which if used improperly could allow an application to overwrite a location in memory that's being used by another program, thus causing a system crash. Another reason Java "is a safer language to program in than C++," Mainer says, is that the programmer is forced to write code to detect, handle and recover from errors before the application is deployed.

For both IS managers, Java so far seems to be a safer development language, but neither has used it in companywide applications yet. Some early experience "supports the idea that [Java] probably is easier to test, but that ... remains to be seen," Mainer says.

HOPE #3: Lower-Cost Thin Clients

Kaminski says he wants Java to possibly solve a business problem. How to build a multimillion-dollar system to manage Job Corps centers at 130 locations for the U.S. Department of Labor. "Each of these [locations] would have a database and very little staff to maintain these systems," he says. A relatively low-cost and low-function thin client, such as the network PCs being promised by vendors such as Oracle Corp., would be one way to maintain the applications and distribute them.

But Kaminski says he is still undecided about whether to use Java on thin clients or to use C++ as the language to develop applications that will run on more traditional, full-functioned PCs.

At US Airways, "we're still trying to figure out where the network computer would fit" and whether Java is the language to use to write the applications for it, Smith says. "It's going to depend on things like the performance aspects of Java" and on what level of client operating system would be needed to run it, he says. Currently, approximately 80% of the airline's desktop devices aren't Java-capable, because they consist of PCs running Windows 3.x or older versions of OS/2 or dumb terminals attached to a mainframe.

"Whenever one introduces a relatively powerful new technology, which Java seems to be, there's the question of how do you get there from here," Mainer says. "A year from now, regardless of the strength of Java, I would say it will play more of a niche [than a mainstream] role just because of the logistics of migration and the costs [of] any large-scale migrations." □

Scheier is Computerworld*'s senior editor, management.*

JAVA'S BIG, BUT NOT A TIDAL WAVE

Is your organization currently developing Java applications?

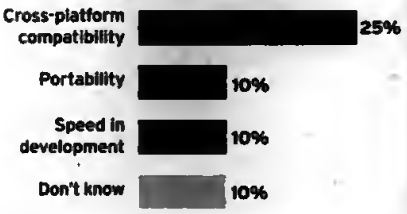


What percentage of your new development involves Java?

14%
(mean)

What do you hope to achieve by using Java in your current development efforts?

TOP FOUR ANSWERS



What percentage of new development do you plan to do in Java two years from now?

21%
(mean overall)
Base=102

44%
among those using Java
Base=20

15%
among those not using Java
Base=82

Source: March 1997 *Computerworld* survey of 102 software developers and IS managers

GLOSSARY

CONTINUED FROM PAGE 75



support for one of the object three (typically, this means there's no support for inheritance).

A component may or may not offer an alternative to the missing object feature.

Applet: Otherwise known as a mini-application, an applet may or may not support all of the object three.

An applet can perform only one operation on its associated data. When using an applet, a user asks the applet to run, thereby invoking the applet to perform its mini-application.

The object three

Encapsulation: The feature that makes an object, component or applet a separate, stand-alone entity. Encapsulation defines the packaging of data and processes within an interface, allowing implementation details to be hidden and protected against corruption.

Polymorphism: Defines the ability to select a method based on the target object, allowing the same request to be sent to multiple objects (applets or components) activating different responses.

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White Paper

Taming the Distributed Enterprise with Systems Management



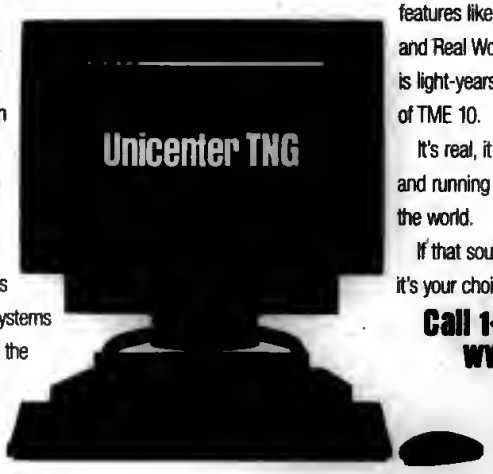
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	✔	

Taming the Distributed Enterprise



by Chris Loosley, DataBase Associates International

In today's distributed enterprises, enterprise systems management (ESM) is like herding wild cats — a task not for the faint of heart. Don't even consider it unless you have a team of lion tamers, as well as a plan to separate and control the lions individually.

Why? The world is a complicated place. Enterprise systems, which are built to support people as they work in that world, mirror that complexity. The challenge facing today's enterprise is to tame the complexity of distributed computing.

When we can't manage our systems, they fail. If they fail, the enterprise fails. But when enterprise systems are managed well, the information infrastructure is more responsive. New applications are possible. Data that was not available before or only through batch reports can be called up online whenever it's needed. A well-managed infrastructure allows the dovetailing of business strategies and information technology. In this sense, ESM is becoming synonymous with good business management.

Historically, ESM has not been treated as a single integrated activity. Large companies have employed network administrators, systems administrators, database administrators, server administrators, web-site administrators, and an equally varied cast of systems and operations managers — all dedicated to the task of taming distributed systems.

As a result, there are five views of systems management, corresponding to the five layers of function in an enterprise system (see chart, p. 5). These five layers have always been managed separately, but the complexity of distributed systems is fueling the need to integrate these disciplines under the umbrella of ESM.

The ideal ESM product would support a single system image comprising all five (or at least the lower four) layers, and a set of interconnected functions to address seven management activities: security, performance, operations, change (including software dis-

tribution), configuration, fault/problem and accounting management. These activities should be integrated across the platforms of a distributed enterprise.

A vast number of point products address these tasks individually, with varying degrees of support for different platforms, and little or no integration among them. Systems managers in large companies sit in front of banks of monitors, each displaying the status of a layer of their enterprise systems. It is an article of faith that, with ESM, integration is a good thing. But if carried too far, it is a vision that does not stand the test of practicality.

Most buyers opt for a best of breed strategy, choosing depth of essential function over the benefits of integration or a single system image. Half-baked integration schemes may be hard to work with, but they're better than half-baked functions. If you buy a tool for configuration management, it must do a good job of handling version control. If need be, you'll buy a second product for software distribution.

This state of affairs will ensure continued business for smaller companies that offer point products geared to specific ESM activities.

Some large vendors have a similar strategy for acquired products. Platinum Open Enterprise Management System (POEMS) is a portfolio of once-independent systems management products that Platinum Technology plans to iotegrate using a common object repository and a common user interface layer. Storage management vendor Veritas Software acquired OpenVision Technologies, a competitor that had tried to break ioto ESM by linking software from 15 vendors.

Large vendors can also create an ESM framework that smaller point products can be plugged into. Even strong ESM product suites can be extended by being plugged into ESM frameworks such as CA-Unicenter The Next Generation from Computer Associates; OpenView from Hewlett-Packard; or Total Management Eoterprise (TME) 10 Global Enterprise Manager from Tivoli Systems (now owned by IBM).

Your choice of a framework will be determined by your situatioo. Starting with a clean sheet? CA appears to have the most comprehensive ESM solution. Tivoli's strengths are its open systems roots and its ties to IBM's mainframe SystemView and NetView products (although they still have integration work to do). HP's strength is in the Unix arena.

But remember: Don't use a sledgehammer to crack a nut. Sometimes a simple point product can do what you need with a lot less fuss than an all-encompassing ESM framework (see chart, p. 6).

The Five Layers of an Enterprise Information System



Source: DataBase Associates



SCOPE OF INTEGRATION

In reality, the possibilities for integration are limited. Each ESM activity involves its own skills and metadata, and at best can be integrated with other activities "at the edges," such as the overlap between accounting and performance management (collecting application profile data) or problem and change management (managing a maintenance change).

Not all integration makes sense. Large enterprise servers and departmental servers at remote sites will likely continue to be managed by separate administrators, reducing the need for integration. Nor will an integrated management tool likely eliminate operating system platform differences, as shown by the difficulties of integrating Unix, NT and mainframe environments.

But what about true cross-platform tools? The meteoric rise of JavaSoft's Java to the second most popular development environment has been fueled by the speed of Internet development cycles and the enthusiasm created by its cross-platform capabilities.

ESM vendors are jumping on the Java bandwagon. For example, Cabletron and Novell plan to exploit Java for Web-based network management. But it will be at least a year before robust Java-based solutions are ready for use in a production ESM environment.

DataBase Associates' Framework for Evaluating ESM Products



ALPHABET SOUP

The push to extend the communications view (network management) to incorporate the hardware and systems software levels (the activities most commonly labeled as systems management) was an early move toward integration. As SNMP became the dominant protocol for network management products to share management information and diagnose problems, vendors wanted to extend it to include the higher layers in the hierarchy. But SNMP, originally developed as a quick solution to support network device monitoring, needed serious extending to meet the needs of the higher layers. The resulting alphabet soup of so-called standards and protocols — CMIP, MIB, MIB II, SNMPv2, RMON, RMON-2 — has led to confusion. Your best bet: Wait for vendors to sort out this mess.

The Desktop Management Task Force, a consortium of more than 120 workstation vendors, has had better success. Its Desktop Management Interface (DMI) has become the de facto standard protocol for managing networked computers. Extensions connected DMI to SNMP, and in 1996, DMI 2.0 added a Management Interface File (MIF) that made managing software at remote workstations possible. Using MIF, agents can check for a hardware and software environment, install and uninstall applications, provide customized support data, and maintain an inventory of installed components.

The trend toward integrating application management with systems and network management is exemplified by Tivoli Manager for Application

(TMA), which exploits the MIF interface. Software developers can create the specifications that allow their applications to be managed by TMA — a key element of an ESM solution, because even if ESM tools are available, someone still has to transfer the management information to them.

The self-tuning, self-managed system is a utopian vision of ESM.

To enable application performance management, HP and Tivoli have developed the Applications Response Measurement (ARM) API, a mechanism to report end-to-end application response times. Suppliers of reporting tools that support this API can obtain the response time performance of distributed applications. These include leaders in enterprise performance analyis such as SAS Institute, Boole and Babbage, Candle and Compuware.

Software agents are another ESM trend. Resident remote agents are like surrogate administrators, monitoring remote sites and reporting on pre-defined problem conditions if they arise. This not only frees us from the drudgery of repetitive monitoring, it is the only viable approach in a very large distributed environment.

This approach is supported by BMC Software in the knowledge modules in Patrol, its enterprise system monitoring product. These expert modules know how to monitor operating systems, databases, transaction monitors and applications such as Lotus Notes, Oracle Financials and SAP R/3.

But there are limits to what agents can do. Will the self-tuning, self-managed system — a utopian vision of ESM — replace faulty network interface cards at remote sites? Or fix its own bugs (including the occasional bug in the bug-fixing software itself)?

A dose of reality is needed here. Computers handle repetitive tasks rapidly and without error; this makes them ideal for many ESM tasks. People are good at making judgments and decomposing complex problems into smaller, simpler ones.

Since the same limitations apply to tools that offer rule-based problem-diagnosis, ESM tools should not take over the whole job. Most complex problems are too unpredictable to match a previously encoded rule. It takes human expertise to find them and human ingenuity to fix them.

FINAL BARRIER

Each of the seven ESM activities requires an administrator with a distinct set of skills. The rare individuals who have mastered the intricacies of managing WANs, Unix and RDBMSs move with ease from network administration to database administration to configuration management. But they don't work at your company; tool vendors have hired them all to work on product integration.

Where is the value in a tool presenting a single system image addressing the five layers shown on p. 5? Where will you find the super-administrators who actually understand what to do with the information? When taming a pack of lions, it's better to divide and conquer than to depend on a superhero arriving on the scene at the right moment.

This White Paper was written by Chris Loosley, a principal consultant with DataBase Associates, an IT consulting company in Morgan Hill, CA. He has 25 years experience in enterprise systems and specializes in software performance engineering and managing performance in a distributed environment. His book, High Performance Client/Server, will be published by John Wiley and Sons this summer.

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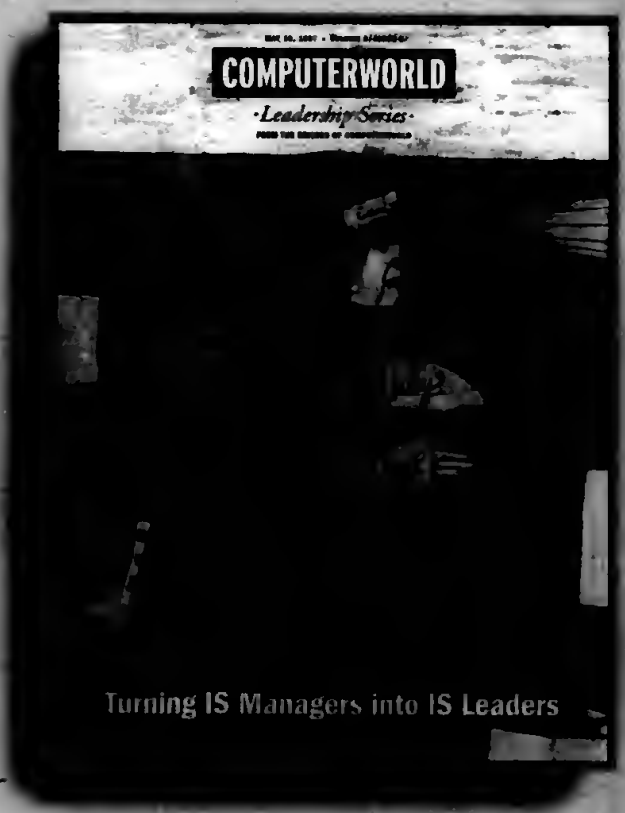
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JAVA!

Sound Off: Java vs. ActiveX

You say you want a revolution.

By Colin Savage



PHOTOGRAPHS BY BRIAN SMALE

ACTIVEX IS AN EXTENSION of decade-old technology, retrofitted to the new world order. Java is the new world order.

The roar of Sun Microsystems, Inc.'s and Microsoft Corp.'s marketing hyperbole has obscured the subject of the debate. The technologies themselves have largely been ignored. In fact, the debate shouldn't be happening at all. If you want to compare the merits of Java with a Microsoft product, that product should be Windows.

ActiveX provides an interesting technique for leveraging a decade of Visual Basic development by tens of thousands of programmers. ActiveX allows those programmers to easily include network functionality in existing programs. It also allows Internet resources to interact with the Windows operating system — a helpful, if sometimes dangerous, capability.

Helpful because it lets an ActiveX component read fields from a Microsoft Excel database, populate a Microsoft Word document with specific fields and display the final results in a World Wide Web browser — preferably Microsoft Internet Explorer. Dangerous because it lets a remote site update your personal schedule with new appointments.

Both types of implementation are useful, but both point to some serious issues with ActiveX, such as the following:

■ ActiveX is a minor technology. Its nearest technical neighbor is Apple Computer, Inc.'s OpenDoc. Sure, ActiveX has generated and will continue to generate innovative applications, but the sum will be *only* a series of interesting applications.

■ ActiveX is useful only for extending Windows applications. Microsoft has made much of its decision to give ActiveX to a standards body and of its subsequent work with third parties to bring ActiveX to Macintosh and Unix operating systems. This is an encouraging sign, but such efforts won't amount to much.

■ ActiveX is inherently insecure. The Internet is filled with hor-

Java, page 82

GLOSSARY

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For example, invoking the method "draw shape" will activate different responses from a square, circle and triangle object, yet the method name is the same.

Inheritance: Defines a relationship between classes that allows for ease in reuse (subclasses will inherit the properties of a base class). Inheritance may be single (only one subclass) or multiple (several subclasses).

Object model: Defines the interface and protocols that the object (or component model for components) supports.

Object-oriented and component-oriented applications: Created by mixing and matching these separate entities to create a complete application.

Components don't have any class

Class: If you're an object, you have class; if you're a component, you really don't. The practice of grouping objects into classes is really about inheritance. Similar objects are grouped into the same class. Objects of the same class have similar

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ActiveX!

We all want to change the world.

By Stefan R. Bothe



THE ACTIVEX-VS.-JAVA debate has reached a fever pitch, but for most of us in software development, the best choice still is based on ageless criteria: Who's the intended customer, and what business problems is that customer trying to solve?

At FlexiInternational, we provide financial accounting applications for multinational, multicurrency enterprises such as Citicorp and Sikorsky Aircraft Corp. These are mission-critical, high-volume online transaction processing (OLTP) applications that must meet the rapidly changing accounting requirements of the most complex organizations.

To provide that adaptability, we chose early on to build our software based on object-oriented methodologies, writing 100% of our code in Microsoft Corp.'s Visual C++, and to optimize it over a wide range of database platforms and server operating systems. We had to satisfy the diverse needs of power accounting and finance users, such as budget analysts, and a new breed of casual users, such as department managers and external trading partners.

Microsoft's ActiveX components can be written in C++ and several other languages and visual presentation environments. At Flexi, our ActiveX Controls expose the same methods that are used in our applications through reuse of our financial class libraries. We are developing client/server and browser/server desktops using the same ActiveX controls.

Had we written such an extension in Java, our developers and customers would need to maintain and synchronize the deployment of two sets of source code written in two languages. The change-it-once-and-change-it-everywhere advantage of object orientation would be neutralized.

In more than 15 years in this industry, I've seen development groups crushed by the cost and loss of focus that occurred when they tried to maintain multiple sets of source code for the same application. For corporate developers responsible for

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properties. For example, a customer object could be part of a customer class. Objects of a higher class contain the properties from which lower-level classes will inherit.

Architecture and infrastructure

Architecture: Defines how all pieces of a company's computing system work together. Today's architectures are typically very complex. An application architecture defines how all the pieces of the application work together (the flow). Similar to a blueprint, the architecture doesn't refer to how an individual process happens but where this process fits in relation to the rest of the system, application or product.

Infrastructure: A piece of an overall computing system or application that provides specific functions (the process by which things happen). Typically, 70% of an application is infrastructure (i.e., how data is accessed or how application-to-application messaging is performed).

Object Request Brokers and standards

Object Architecture Standards: Define how the pieces (both object and non-object) of an overall architecture will work together. ORB standards define the blueprint an ORB vendor will follow to make the product standards-compliant. The Architecture Standard defines the interfaces and communication protocols that all pieces of the architecture will support and defines how these pieces interoperate.

Although Object Architecture Standards introduce an approach that could be used for a systems architecture, the standards define only an ORB product architecture — it's up to a company's systems architect and developers to decide

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Java

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ror stories, such as the ActiveX control that erases a hard drive and shuts down a computer. Microsoft itself doesn't claim that bad things can't or won't happen as a result of ActiveX.

Microsoft instead points to its signature model, in which developers of ActiveX controls "sign" them, allowing end users to decide whether they trust the signer or the signer's organization.

Signing is a nice try at a tricky problem, but it won't work. Developers have already spoofed signatures. End users are unlikely to know whom they can trust or why they should care.

Java, however, provides the component framework that makes ActiveX compelling and offers several features beyond the purview of ActiveX.



Colin Savage *is a technology analyst at Agency.Com, a New York-based online marketing company. He has been involved in Internet development since 1994, primarily as a contributor to corporate online projects, such as sites for British Airways PLC, Claris Corp., Lucent Technologies, Inc., GTE Corp. and Metropolitan Life Insurance Co. His favorite standard is H.323.*

The most basic feature is that Java is a computer language, whereas ActiveX represents a group of applications written in a computer language. In fact, the component architecture that makes ActiveX an important Windows development tool is provided as a subset of Java applications. Those component Java applications are called JavaBeans.

Java applications can run on nearly any operating system because they don't actually interact with the operating system but with a virtual machine optimized for a specific platform. That means an application written once can run equally well on multiple operating systems. That's a claim that no Microsoft product, including ActiveX, can make.

Java applications are safer than ActiveX controls because Java applications are limited to a "sandbox" in which their virtual machine resides.

Java provides an effective and efficient development environment: It is a language designed for the end of this millennium and the beginning of the next.

Java was designed for network deployment in an enterprise environment — for an environment in which resources are distributed across the network, computers are ubiquitous and development is based on reusable components. That makes Java more effective because key facets of network computing — remote resource access, digital security, internationalization and media support — are implicit in Java. That makes Java a more efficient development environment because developers can quickly create applications that interact with legacy resources on nearly any operating system.

Microsoft — whether its faith stems from cynical marketing or true belief — is centered on the preservation and continuation of Windows. Any technology or product that might conceivably let users avoid Windows — in short, anything like Java — is anathema.

Java provides code for the next generation — code that is independent of processors, operating systems and even physical location.

As the computing world moves into its networked period; as network access moves off the desktop and into the television, home alarm and cellular telephone; and as applications become increasingly distributed, that independence will be a vital edge for developers. □

ActiveX

CONTINUED FROM PAGE 81

ongoing maintenance, dual code bases make the resulting "Internet-extended" application difficult to adapt in a timely manner.

The language independence of ActiveX lets us avoid the redundancy of building and maintaining a separate "Internet extension" that multiplies the complexities and maintenance issues of existing client/server modules.

Also, performance is always a key concern, especially for OLTP applications. It has yet to be proved to our satisfaction that OLTP can be written successfully in Java. The interpretive nature of Java, combined with the bandwidth-choking need to continually download Java applets, creates an environment in which heads-down data entry is an unpleasant experience.



Stefan R. Bothe *is co-founder and CEO of Flexi International Software, Inc., a provider of financial and accounting software in Shelton, Conn. The company is a Microsoft Solution Provider.*

For OLTP functions such as financial reporting and analysis, in which users of Flexi applications spend a lot of time, the visual quality of the environment is equally important. According to International Data Corp., more than 80% of all corporate desktops run Windows. Windows power users are accustomed to a look and feel that can't be achieved with platform-neutral versions of Java. Whenever I download a Java applet, I get flashbacks of Windows 2.0. Our power users aren't likely to take such a big step backward in usability.

Don't get me wrong. I'm not totally down on Java. For the casual-user portion of an application, Java's platform neutrality is quite an advantage. Even discounting the stories of Java compatibility problems, this capability is compelling for the developer of an Internet application in which the client environment isn't known or the use is infrequent.

Security is often cited as a concern for ActiveX applications; everybody's heard examples of renegade components deleting files, shutting down Windows or covertly executing client programs. The publicity surrounding these breaches has focused an army of experts and hackers on trying to break ActiveX. But this publicity and Microsoft's responding efforts can only make ActiveX more secure. To date, Microsoft has had an impressive track record of providing fixes to discovered breaches.

Regardless, for the corporate intranet user, running ActiveX isn't too different from running programs off any other file server. In both cases, the system works because the programs come from a known, trusted source.

I often hear that a strategy that is ActiveX-based is "too Microsoft/Windows-centric" and paints information systems into a technology corner. We don't see it that way.

After all, the ActiveX specifications were released to an independent standards group (The Active Group) long before Java's specs were.

As the Java-vs.-ActiveX battle drags on, we once again see vendors on both sides trying to gain mind share and market share at the cost of interoperability. Fortunately, history shows that IS abhors a functionality vacuum.

The interoperability gap between ActiveX and Java is narrowing and will continue to narrow. How? In many ways, ranging from Visual Basic-to-Java generators to Windows terminals to possibly even an "ActiveX virtual machine" capable of running under the JavaOS. □

GLOSSARY

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whether they will use the Architecture Standard throughout their computing environment and applications.

Common Object Request Broker Architecture (CORBA): A standard ORB architecture defined by the Object Management Group.

Distributed Component Object Model (DCOM): An ORB architecture defined by Microsoft.

Object Request Broker (ORB): An infrastructure product that handles the communication among objects and components. The ORB allows these objects to communicate (send and receive responses) independent of system aspects (i.e., language, operating system and location).

— Glossary by Karen D. Boucher, director of The Standish Group International, Inc. in Dennis, Mass.



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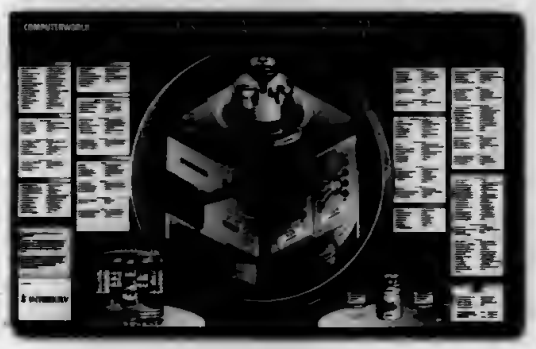
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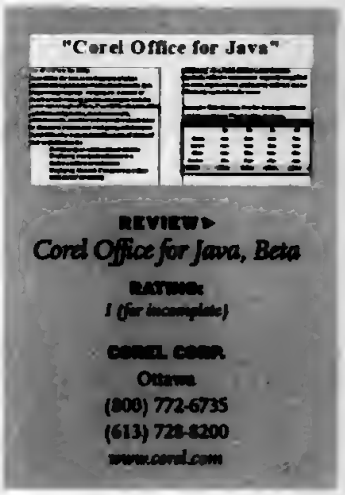
Corel Office for Java is a tantalizing but frustrating first draft

BABY steps

By Frank Hayes

Have the first Java office applications finally arrived? With its Corel Office for Java, Corel Corp. has carved out a miniature version of its WordPerfect Office suite. Office for Java's word processor, spreadsheet, presentation package and personal information manager mimic the functionality of larger applications, and they're written entirely in Java, Sun Microsystems, Inc.'s cross-platform language. But there are good reasons why Office for Java is still in beta testing. The current version of the suite doesn't deliver key features that corporate users view as standard, or the ability to use the suite successfully from within a Web browser.

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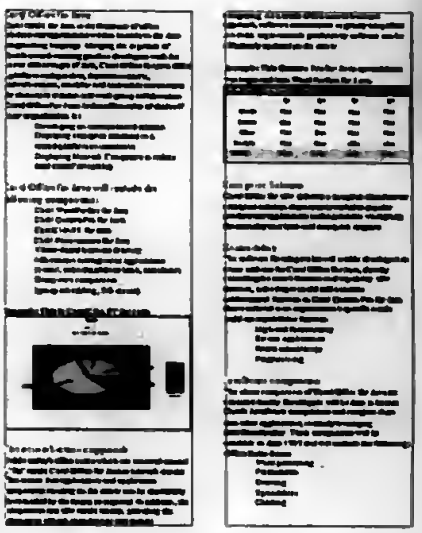
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BABY steps

Office for Java features scaled-down versions of WordPerfect, Quattro Pro, Corel Presentations and a calendar and address book

"Corel Office for Java"



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Office for Java consists of scaled-down versions of the WordPerfect word processor, Quattro Pro spreadsheet, Corel Presentations, a calendar and an address book. The applications are electronic-mail enabled and can be launched from a user's desktop or within a World Wide Web browser.

In theory, that should mean Office for Java runs on any Java-enabled platform, including PCs, Macintoshes, Unix workstations and network computers.

The suite also was designed to run from a user's local hard disk drive or to be downloaded from a server as parf of a Web page.

I tried Office for Java as a stand-alone application under Windows 95 and used both Netscape Communications Corp.'s Navigator and Microsoft Corp.'s Internet Explorer Web browsers. That's when the first problems showed up. Although Office for Java's 9M-byte file downloaded and installed easily, the package wouldn't run properly under Navigator or Internet Explorer.

The current version of the suite doesn't deliver key features that corporate users view as standard, or the ability to use the suite successfully from within a Web browser.

OPERATING GLITCHES

Under Navigator 3.01, Office for Java couldn't read or save local files; it functioned as if it had been downloaded from a Web server. Under Internet Explorer 3.0, the suite could load and save files, but the word processor crashed when a document grew longer than a page.

I was still able to test Office for Java as a stand-alone desktop application, because the package automatically installs its own Java virtual machine. But that led to performance problems. Navigator and Internet Explorer include special Java accelerators that let Office for Java run at a reasonable clip.

But as an unaccelerated Java desktop application, Office for Java was painfully slow — it dropped typed characters and hesitated visibly during mouse-dragging operations. An office worker who tried the suite for *Computerworld* on a 100-MHz Pentium PC said the performance was comparable to a native Windows application on a 16-MHz 386-based machine.

A bigger problem is that the suite lacks crucial business features in its word processor, spreadsheet and presentation package.

For example, none of the modules could import or export documents that weren't created in Office for Java. And although the suite has a clipboard function, it allows copying only between modules of the suite, not from other applications using the Windows clipboard. Business users can't afford to be cut off that way from documents.

Each module also lacked crucial features. The word processor, for example, was comparable to the WordPad program that comes with Windows 95, but it included additional features such as the ability to create bulleted lists automatically. But it lacked features such as spell-checking, hyphenation, justification and the ability to count the words in a document.

SPREADSHEET SNAGS

The spreadsheet came with a set of 158 functions to insert in spreadsheet cells, including date and time, engineering, financial, math and statistical functions. But one of the spreadsheet's more clever features — the ability to embed an automatically updated stock quote in a cell — all but locked up the test system when it couldn't connect to a server. The warning dialog box wouldn't go away, and I had to shut down Office for Java to clear the problem — a very slow process.

The presentation package included all the word processor's capabilities and a limited set of drawing tools. But the image-importing function didn't work, and the suite's printer driver — which required a PostScript printer — clipped off the right-hand side of the landscape-mode presentation slides.

In fairness, all the modules were easy to use and learn, even without the help system, which was missing or incomplete for most modules.

The suite's calendar and address book are relatively simple to use. The E-mail feature allows for basic sending and receiving of mail.

Some of the glitches were technical problems Corel must fix before Office for Java ships this summer. But the lack of business features, such as spell-checking and the ability to import and export documents, made the suite unusable in an office context.

In the end, the Office for Java beta is a tantalizing but frustrating first draft for a suite of Java office applications. Corel has much work to do — both to make the suite work within popular Web browsers and to add the features office users need — before these Java applications are ready for prime time. □

Hayes is Computerworld's staff columnist and has written about programming for 15 years. His Internet address is frank_hayes@cw.com.

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versity of North Carolina in Chapel Hill. Includes conferences and Java user groups.

www.gamelan.com
Features a large collection of Java code, working applets and pointers to still more Java information.

www.wired.com/wired/3.12/features/java.saga.html
A cool — albeit long — account of how Java was born.

www.wakefarence.com/books/programming/java.html
Site offers reference books on Java with hot links to the publisher. But beware; a handful of the links are dead ends.

www.javasoft.com:80/nav/read/Tutorial/
An online version of *Java Tutorial*, which is a guide to writing programs in the Java language.

Books

Advanced Java: Idioms, Pitfalls, Styles and Programming Tips; Chris Laffra, Prentice Hall Computer Books, Upper Saddle River, N.J.; $32.36.

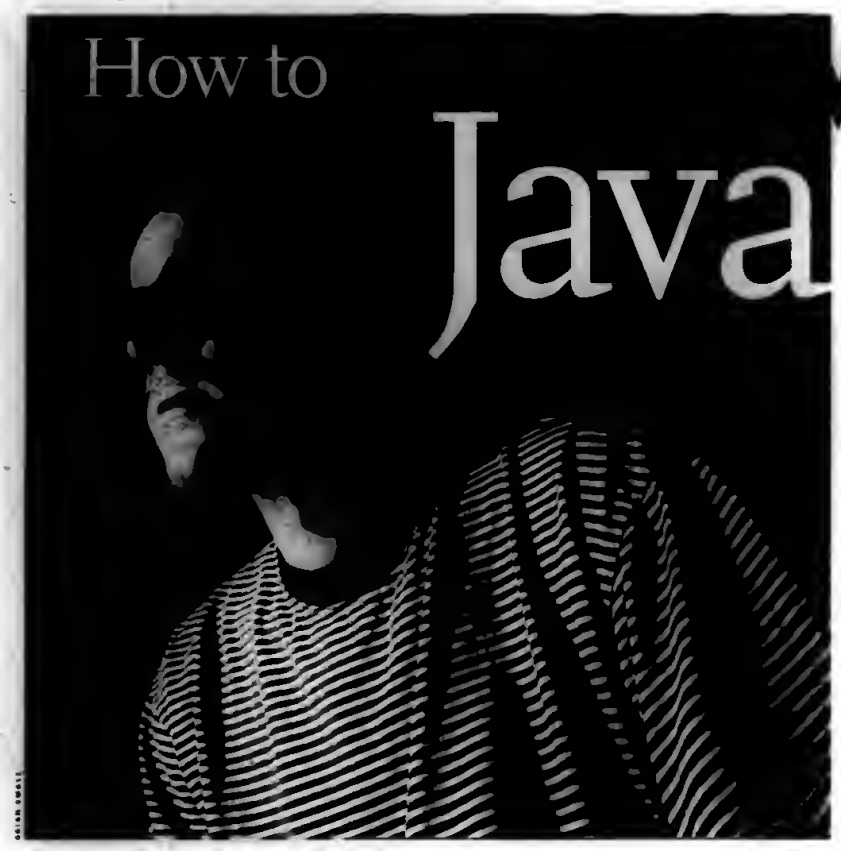
Hooked on Java: Creating Hot Web Sites with Java Applets; Arthur van Hoff, Addison-Wesley Publishing Co., Reading, Mass.; $26.96.

Java for Dummies; Aaron E. Walsh; IDG Books Worldwide, Inc., Foster City, Calif.; $22.49.

Just Java; Peter van der Linden; Prentice Hall; $31.46.

The Java Class Libraries: An Annotated Reference; Patrick Chan, Rosanna Lee; Addison-Wesley; $31.60.

How to Become a Java Guru



Do It Yourself

Java pros tell how to give your career the Java jolt

By Leslie Goff

THE JAVA PHENOMENON reminds Arthur van Hoff, chief technology officer at Marimba, Inc., of the aura around Unix during the 1980s.

"When I was a student, I would go to these Unix user groups, and there would be the biggest nerds in their green Army jackets and beards all talking about installing device drivers and virtual memory and all this absurd technical detail," says van Hoff, who is currently at the hottest company to hit Silicon Valley since Steve Jobs and Steve Wozniak moved out of their garage and into real office space.

"It was a cult following, and these Unix gurus were a certain type of person. Now Unix has lost a lot of its mystique, and Java has that same feel. At JavaOne, there were 10,000 people who really wanted to know all about Java," van Hoff says.

From its beginnings only 18 months ago, Java has bloomed from a World Wide Web development tool into a full-fledged programming language. And it has inspired a feverish religiosity among its advocates. Applications developers wax poetic about its cross-platform capabilities, networkability, database connectivity and component architectures.

They rail about the widening rift between Sun Microsystems, Inc. and Microsoft Corp. over pure Java vs. a version of Java in which Microsoft would appropriate Java standards for the Windows operating systems. Proponents of Sun's JavaSoft efforts toward open standards say Microsoft's moves would eliminate many of the language's advantages.

Its followers believe Java is the future. They believe it is the one language truly capable of delivering on the promise of distributed computing.

"I haven't used anything besides Java since the day I downloaded the JDK [Java Development Kit]," says Manu Kumar, who used the language to develop a chat applet for the distance learning program at Carnegie Mellon University's School of Computer Science. "Before, I was using C and C++. As long as Java lets me do whatever I need to, I couldn't go back. It is cleaner and simpler and just a nicer language than all the others."

In corporate information systems, however, management remains characteristically cautious. Widespread development of stand-alone Java applications isn't yet a reality. Although the acceptance curve for Java has been dramatically shorter than it was for other technologies historically, it will be up to aspiring IS staffers to convince management that the language is a viable business development platform.

Computerworld spoke with six experts in the nascent field about how corporate applications developers can become Java gurus who will light the way, lead the flock down the path of righteousness and deliver IS management from the "evils" of platform dependence.

The Java jolt: START YOUR EDUCATION NOW

VAN HOFF: You have to read and read and read. Reading is key because of the pace of the development of the language. If you use something like Visual Basic, you would get a CD-ROM and the manual, plow through it and then you are coding. After that, there isn't much interesting to learn or read about. Java is a much broader experience. It is changing and expanding rapidly, and the documentation is always a little behind.

Also, there are a lot of people in public [online] forums where you can get questions answered, and you can get on mailing lists that have a lot of real value to developers in terms of what's going on, how to do a Java app and how not to do it.

GOELDNER: There are so many books out there, you have to be careful. Try to get the most recent ones, and look for ones endorsed by Sun because they know which ones are best, being the inventors of the language. Also, take some training classes and attend conferences. Some are good for beginners; some are redundant if you've already been working with Java for a while.

A Web developer conference is good if you are just starting to learn the nuts and bolts. The JavaOne conference recently had a wealth of information — it went much deeper than just learning how to code. You need to understand the technology involved — the virtual machines and how they work, what is pure Java and what is not transferable.

KUMAR: Personally, I spend two hours a day doing nothing but reading news and answering E-mail on Java. I make a point of keeping up. But the best way to learn is to get your hands dirty. Just reading is a good way to find out what's going on, but at some point you have to dig in or else you will get into analysis paralysis. The best resource is always people who are working

with Java. We're trying to put together a local user group here in Pittsburgh.

FORTUNA: Generally, the overarching rule of thumb right now is, "Go for the lowest common denominator." There will always be a leading edge that is out of reach of the main Internet community, so go for what works on as many platforms as possible. Right now, that is anything based on the 1.01 release of JDK for Version 3.0 of Netscape [Communications Corp.'s Navigator] and [Microsoft's Internet] Explorer. That is, if you're writing browser applets. Then there's the whole area of stand-alone applications development.

BREEN: First, learn the core API. And then you have to pick your poison based on either your company's applications needs or your own background, because Java has an awful lot built in to it. For instance, if you like GUI development, then focus on those aspects. It's good to have a corporate IS project focus. That helps you narrow your education down to the specific part of Java that you'll be using a lot.

HUEY: The key point is the context. Just knowing Java is not enough, but knowing how it fits into the broader [IS] infrastructure. There are a lot of standards battles: CORBA vs. [Distributed Component Object Model], JavaBeans vs. ActiveX — you need to know enough to pick a strategy that is beneficial, whichever standards play out. Standards independence sounds pretty, but I don't think it is practical. Be aware of the ups and downs of choosing a particular course of action.

Sun vs. Microsoft: WHAT YOU SHOULD KNOW

KUMAR: Both Sun and Microsoft have their problems with Java. Sun has been really good at making Java more stable, more enterprise-oriented and so on. Microsoft is doing the same thing, but trying to be backward-compatible with Windows. So you could bet on either one, but I would rather bet on Sun because I don't think Microsoft is being very honorable toward Sun's Java. Developers will have to look at both sides and see which gives them more benefits in terms of their intended results, and focus on that. But I favor 100% pure Java, and I don't anticipate using ActiveX in the near future.

FORTUNA: Watch Microsoft and watch what they are doing, because they define the market share. Whither Microsoft goes, the rest of the world shall follow. And it has appropriated the Java virtual machine into its operating system, renamed it the Microsoft Virtual Machine and has taken steps to constrain it somewhat so you can only do your best work on the [Windows] platform. That seems to indicate that Microsoft is taking Java seriously, but also that it wants to cripple Java by making it more proprietary toward its vision of software development, which is dangerous. Nevertheless, if you are creating Web apps, Explorer remains a viable platform.

No matter what, it's always about the best performance, especially if you're a corporate developer. All religion goes out the window when you talk about performance. And it isn't always pure Java that will give you the same performance as on a native platform.

VAN HOFF: At Marimba, we're in the pure Java camp. It's a matter of cost. If I were an IS manager starting a project from scratch and I had to deliver software to a variety of remote computers, there's no question that I would do it in [pure] Java.

The performance issue is solvable, but what's not solvable is lowering the cost of development. We have four products that run on eight platforms, and we have developed these in a year. We could not have done that in any other language besides Java.

GOELDNER: It depends on whom the target is. If the end user of the application is going to be on a Windows box, and you want to buy in to Microsoft's ActiveX add-ins, that's fine. But if you want to be open, and you don't know what platform the end user is using, then stick with pure Java so the application will run on any platform.

Applications: GET YOUR FEET WET

FORTUNA: Java chat applets are popular because Java was written to be a networked language. A lot of things that were difficult to do in C++ — like communicating with the Winsock layer or applications that work over TCP/IP connections — are very simple and almost transparent in Java.

The Java.Net package in the JDK libraries has all the information you need. Creating a socket is [easy], and all the properties of the socket class are easily accessible via Java APIs. Java probably does networking better than anything else.

Going forward, we will see applets and stand-alone applications that provide database connectivity.

The [Java Database Connectivity] engine will make database connectivity a lot more transparent. Java's platform independence is key because so many databases run better on a Unix platform, and Java has robust security features.

GOELDNER: We have some Java applications on our intranet. One of the most popular is an organizational chart that displays in graphical form the corporate [organizational] chart and how everyone is positioned in the company.

HUEY: Pick an area on the company's time. Choose a pilot application to work on that you can sell as having potential, one that has an immediate [return on investment], like an employee phone book. Corporations are pretty receptive to a small Java project, but they aren't willing to bet everything. They are willing to dabble, if you pick the right project.

Get your management on the JAVA BANDWAGON

GOELDNER: It isn't going to be an easy sell to begin with. Even at FedEx, [IS] doesn't want to go to the bleeding edge of technology. It would be advisable just to go ahead and write a prototype to show how a Java application could work.

That's more work, but it is always beneficial to have something to show. For example, that org chart was a good one for showing people how Java can work. Stay away from graphics and games because that is not going to help you solve a business need.

Pick a core application that everyone is familiar with and uses, and take part of it and show how easy it is to do it in Java. You could show how much easier it is to do memory allocation in Java than it is in C++.

BREEN: The key points are: It will run on all platforms, including Windows 3.11; it enables very rapid development time — studies show that it's much faster than procedural languages and C++; and it also builds good expertise in the IS department because everyone is interested in Java.

All the good [vendor] companies either now interact with or are delivering applications fully written in Java.

For instance, Oracle's whole new strategy is on Java. It isn't a bandwagon to jump on. People actually are basing their strategies and products on it.

Cream in the coffee: SKILLS THAT COMPLEMENT JAVA

GOELDNER: I like to see candidates who have experience with C or C++, who have familiarity with any SQL database and who understand how transactions work. And I like to see that they have done some real Web-based applications.

BREEN: If you have the Java ability combined with a client/server focus and relevant business skills where you have domain knowledge, that's a big win.

I originally worked on Wall Street. If I went back to that industry now with my Java expertise, it would be a huge plus.

Right now, we are seeing people from more established industries looking to experiment with Java apps, and they have no in-house expertise. So they are taking people from untraditional industries where they usually wouldn't look, because they would consider it too risky. If someone's experience with Java is putting up audio and video and animations, [IS managers] have to ask, "How effective would this person be at corporate applications development?" □

Goff is a freelance writer in New York.

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The panelists:



Andrew Breen, *director of software engineering at EarthWeb, Inc. in New York, a provider of Java tools and services.*



Manu Kumar, *a student at Carnegie Mellon University and president of SnowballLabs in Pittsburgh, a provider of Java applications.*



Joey Fortuna, *head of development at Pseudo Programs, Inc. in New York, an online entertainment company.*



Arthur van Hoff, *CTO at Marimba, Inc. in Palo Alto, Calif. Was member of original Java development team.*



Susan Goeldner, *manager of Internet technology at Federal Express Corp. in Memphis.*

Mark Huey, *research analyst, applications delivery strategies, at Meta Group, Inc. in Stamford, Conn.*

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Software Engineer (IBM Mainframe): Structured systems analysis, design, development, testing, quality assurance, implementation, integration, maintenance, support & conversion of large real-time, multi-user, fast processing & batch application systems in a multi-hardware/multi-software environment over centralized database systems using relational/hierarchical/network database management systems, Third Generation Languages (3GLs), Fourth Generation Languages (4GLs), CASE tools & Transaction Processing Software. Reqs: B.S. in Comp. Sci., Engr'g or Sci. (or equiv.) & 2 yrs exp in job offered or as Programmer Analyst/Systems Analyst. Must have experience combination of skills as follows: 1 of A & 1 of B & 1 of C; or 1 of A & 2 of B; or 1 of A & 2 of C: A includes DB/MS: DB2, IMS DB, IDMS DB; B includes Tools: CICS, IMS DC, IDMS DC, ADSO, CMS, VSAM, MF-Workbench; C includes Languages/CASE tools: TELON, IEF, ADW, CSP, APS. High mobility preferred. (Multiple positions) 40 hrs/wk; $45,000 - $60,000/yr. Resumes must be received by PA Job Ctr, Mr. James Clark, Office of Employment Security, 32 Isaac St., Pittsburgh, PA 15401. Job #0001281.

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Consultant [10 openings]: (Ref: 6011240): Consulting with clients to define and analyze their computer systems needs; analyze client's current business processes and existing computer set-up, design and recommend systems solutions; work with the client to plan, design, develop, test, implement and maintain proposed systems solutions; using Sybase, Ingres, and Unix/Solaris. Reqs: M.S. yr. Exp. in the job offered and Master's in C.S., Systems Anal., C.I.S., M.I.S., Info Tech., Comp. Info Tech., Comp. Appl., Comp., Electrical, or Electronic Engg., C.S. Engg., or Math., or its foreign educ. equiv. or its equivalent in educ. and exp.We'll accept a Bachelor's and 5 yrs of progressive post-baccalaureate exp. in the computer software specialty, in lieu of a Master's degree. $60,000/yr. 40 hrs/wk., 8a-5p, M-F. Send resumes with Ref. No. to Mr. Vince Masavitch, Manager, Office of Employment Security, 346 Fifth Ave., Monessen, PA 15132.

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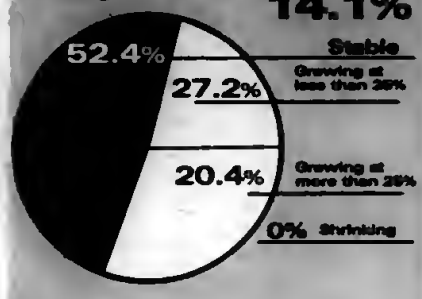
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Career Survey: Database Management Software

Industry Hiring Trends

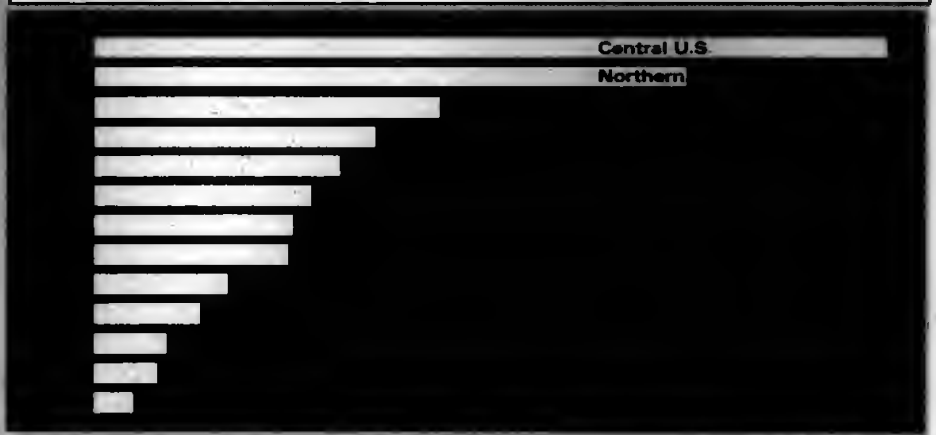
Overall growth rate **14.1%**



Survey base:
169 technology firms involved in Database Management Software

Survey conducted between February '97 and April '97

Regional Growth Analysis



CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 45,000+ technology manufacturers. This survey relates to the 30,941 tracked firms with fewer than 1,000 employees.

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Lead Programmer Analyst, Dallas, Texas. Plans, schedules, directs, tests and documents complex software applications for asset backed securitization computer systems. Consults with managerial, systems and user personnel to learn user requirements, identify application problems, develop solutions and determine programming required for resolution; consults with user departments to ascertain current operating procedures, reviews manuals, technical reports and systems specifications to determine methods to meet user objectives; works with programmer analysts to analyze system capabilities, develop programs and subsystems, prepare flowcharts and/or reports of proposed solutions for approval, covert proposed solutions into detailed system specifications for solution implementation and supervise installation and testing pursuant to systems standards; conducts all exception testing and implements results; maintains all applications and resolves all problems with the programs and/or subsystems to user satisfaction; conducts user staff training on new system adaptations; supervises and trains junior programming analyst; and generally, designs, adapts and maintains our software applications to satisfy all user objectives using OS/MVS, COBOL II, CICS, CSP, DB2, TSO and ISPF Applications must have at least 4 years' experience as a Lead Programmer Analyst or 8 years' experience as a Programmer Analyst. Experience to include: At least 3 years' experience with: (1) OS/MVS, COBOL II, CICS, CSP, DB2, TSO and ISPF; and (2) application software for asset backed securitization systems. Must be on call as required. Excellent English communication skills. Remember At least 2 references. Bachelor of Science, Computer Science or Management Information Systems. Employer will accept 2.5 years of progressively responsible experience for each year of college an applicant lacks toward a degree. 8:00 a.m. to 5:00 p.m. $53,600/year. Apply at the Texas Workforce Commission, Dallas, Texas or send resumes in duplicate to the Texas Workforce Commission, 1117 Trinity,Room 424T, Austin, Texas 78701. Job Order TX7857094 An Equal Opportunity Employer

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Programmer Analyst - Battle Creek, MI - Design, test & implement financial & info mgt systems using ORACLE database systems on UNIX and VAX/VMS hardware Use SQL*Forms v3 and PRO*C Prepare prog specs and sys docs. Enhance/debug existing sys and progs. Req Bach in Comp. Sci. or Math & 2 yrs exp. M-F, 8AM-5PM, 40 hrs/wk, $72,500/yr Send resume to 7310 Woodward Ave., 4th fl, Detroit, MI 48202. Ref #156196.

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Software Development Consultant Provide services to customers in design & development of business applications for communications, financial management information, commercial & manufacturing support; design & implement software in AS/400 environments with RPG/400, CL/400, SQL/400 Cobol/400, Sybase, SDA, SEU & RLU; develop interfaces between the AS/400 & customer systems; debug, modify & fine-tune systems & applications; provide technical support & user training. $55,000/Yr. 40 hrs/wk, M-F 8-5 in Computer Sc or Computer Engr & 2 yrs exp in job offered or 2 yrs related exp as Systems Analyst, or Programmer Analyst or Graduate/Undergraduate Student to include use of technical skills noted in job duties. Submit resumes to the OK Employment Security Commission, 4509 S I-35 Service Road, OK City, OK 73129 (O + 5603) Ref Job Order# 263582.

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Systems Analyst required by information technology consultant company Duties: Analyze, design, develop, test & implement computer software programs after evaluating user requests for new or modified programs, determine feasibility cost, time required and compatibility with existing systems and hardware. Provide technical support on Multi-Platform environments such as IBM Mainframe UNIX Server & PC's using MVS/ESA, MF COBOL, COBOL II, DB2, Oracle, UNIX, CICS, JCL, QMF, SPUFI, PL/SQL, CSP/AD, CSP/AE, SCP V4 Releases. Job also requires porting of Systems from one platform to another across Databases from remote locations. Job to be performed by travelling and relocating to various unanticipated sites throughout the U.S. as assigned. Requirements: A Bachelors degree in either Math, or Engineering (any discipline in Engineering), or Science, or Comp. Science and two years experience in the job offered or in the related occupation as Analyst/ Programmer or Systems Officer/ Consultant/ Engineer. Must have minimum two years experience in the use of MVS/ESA, UNIX, ORACLE, MF-Cobol, DB2, CICS, SPUFI, SQL*PLUS, CSP/AE & CSP/AD. Salary: $46,000/Year. Hours: 40/Week, 8.30 am to 5.30 pm. Submit resumes to: Mary Rogers, Department of Employment Services, 275E Main Street, 2W, Frankfort, KY 40621. Refer to JO# 0388601

SYSTEMS ANALYST. Analyzes user requirements, procedures, and problems to automate processing or to improve existing computer system. Bachelor of Science degree in computer science, engineering, physical science, or math-related and two years experience in job offered or as programmer required. Two years experience COBOL, Novell Netware, OS 451, CICS, VTAM, VSAM, Rococo, Oracle 7.0, SQL Forms, Foxpro. $52,000/yr. Interested applicants apply by resume to Georgia Department of Labor, Job Order # GA 6088196, 2943 N. Druid Hills Road, Atlanta, GA 30329-3800 or the nearest Department of Labor Field Service Office.

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Software Engineer to Enhance and modify SIS, a Btrieve, REXX and C/C++ based product on OS/2. Enhance graphics capabilities in SIS using vector graphics. Participate in design and development of graphics modules (within SIS to handle metallic formed hydraulics and Electrical schematics.) Modify API's for operator search. Investigate help desk problems. 8 am - 5 pm M-F 40 hrs/wk $48,000/year. Require BS in Electrical/Electronics Engineering or Computer Science or equivalent and 3 years experience in the job offered or as a Project Engineer, Software Engineer, Design Electrical Engineer or equivalent. Experience must be non-academic and include: designing and developing vector graphics applications using C/C++ on OS/2; using REXX and techniques of graphics manipulations to OS/2 format. Job in Cary, NC. JOB Order No. 5781231 DOT Code 030.062-010. Apply to the nearest Job Service Office or submit a resume to Job Service, 742-F East Chatham Street, Cary, NC 27511. Resume must include applicant's social security number.

Software Engineer (Colorado Springs, CO; Pittsburgh, PA; & other client sites in US): System analysis/dsgn/dvlp/implmnt/maintain & test client's comp system; consult w/users, perform coding & unit testing of enhancements; integrate new features to existing system; prep system documentation, prgm specs, & test case memo, & provide tech support & implmn-t'n solutions. Envrnmnt: IBM 3090, VS COBOL-II, DB2, CICS, JCL, VSAM, & SDF-II. Bach deg in any major + 2yr exp in job offd. Employer will accept master's deg any major + 6mos exp in job offd $62K/yr, 40hr/wk, 8-5. Report/submit resume to: PA Job Center: JO#9068639, Stan Majesky, Mgr, Otc of Employment Security, 853 East High St., Waynesburg, PA 15370. Must have proof of legal auth to work in US.

SOFTWARE ENGINEER: (2 positions) 40 hrs/wk, 8 a.m. - 5 p.m., $47,000/yr. Carry out systems analysis, systems design, coding and testing of software application systems on IBM AS/400 utilizing COBOL, RPG, CL/400 and C. Req: bachelor's degree in Computer Science or Computer or Electrical or Mechanical Engineering. Req: 3 yr exp in job offered or 5 yr. exp in Systems Analysis &/or Programming &/or Computer Consulting &/or Engineering. Req: work experience in development of s/w systems on IBM AS/400 and with COBOL, RPG, CL/400 and C. Employer is a s/w development/consulting firm. Relocation to client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref No: 176886

Software Engineer - coordinate design, development & implementation of software systems consistent w/ applicable hardware environment; perform software system analysis, design, programming & testing to assure compatibility w/ user requirements & time/cost constraints; develop & implement enhancements to software systems utilizing knowledge of ORACLE 7 & related tools, COBOL & C languages on UNIX and Windows; perform data modeling including logical & physical database design; maintain systems after implementation of software modifications & enhancements. Requires BS in computer science, computer applications or engineering + 4 YR exp. (2 YR exp w/ MS degree in computer science, computer applications or engineering). $44,000/YR, 40 HR/WK. HRS 8-5. Job in various locations throughout US. Mail resume to ISS, Att: VC, 7110-D Elden Street, Ste 304, Herndon, VA 20170.

PROGRAMMER/ANALYST: (2 positions) 40 hrs/wk, 8 a.m. - 5 p.m., $40,000/yr. Carry out program analysis, program design, coding and testing of software systems for manufacturing applications utilizing UNIX, C, C++, PASCAL, and SAS. Req: bachelor's degree in Computer Science or Electrical or Mechanical Engineering. Req: 1 yr exp in job offered OR 1 yr. exp in Systems Analysis &/or Programming &/or Computer Consulting &/or Assistant (on-campus experience acceptable). Req: work exp in dev. of s/w systems and with UNIX, C, C++, PASCAL and SAS. Employer is a s/w consulting/development firm. Relocation to various client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No. 1782-96.

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Programmer/Analyst (Client sites in IA; PA, CO & other US sites). Analyze/dsgn/enhance/implmnt/maintain/test & provide tech support for clients comp systems & subsystems. Envrnmnt: IBM 3090; MVS/ESA, JCL, COBOL II; DB2; EXPEDITER; CICS. BS any major + 2yr exp in job offd. 40hr/wk; $54K/yr; 8-5. Must have proof of legal auth to work in US. Send resume to: PA Job Center: Ms. Charlene Cogley, Mgr., 2103 Ninth Ave, Beaver Falls, PA 15010; JO#9068624

Programmer/Analyst - at client site in N. Andover, MA area. Write test plans for systems & regression testing of synchronous optical network; write shell scripts; design test cases; execute test plans; prepare s/ware documentation. Bache/Comp. Sci. or Engg or Math. 2yrs/exp. in job offered. Exp. must incl. 1yr working w/fiber optic network, SUN workstation, UNIX & writing test scripts for regression and system testing. 40hrs/wk (9-6; M-F) $55,000/yr. Send resume in dupl to: Case #70254, PO Box #6948, Boston, MA 02114.

Programmer/Analyst (Client sites in IA; PA & other US sites). Analyze & design of reqmts & systms, user interaction for reqmt study, system data flow & process flow dsgn, specs prep'n, dvlpment of prgm unit/system testing, tech support & documentation. Envrnmt: IBM ES9000; CICS, DB2; CUST; JCL, XPEDITER, VS COBOL II. BS any major + 2yr exp in job offd. Employer will accept master's degree + 6mos exp in job offd. 40hr/wk; $60K/yr; 8-5. Must have proof of legal auth to work in US. Send resume to PA Job Center: Duane M. Brantzel, Mgr; Otc of Employment Security; 599 Seib Lane, Greensburg PA 15601. JO#9068629

Programmer Analyst - analyze, design, develop, test & implement application software using ORACLE 7 relational database management system tool/widely & ORACLE tools, including SQL* Forms, SQL* Menu & SQL* Reporter/ter under HP-UX and SunOS operating systems; provide technical assistance in conversion of system maintenance after software modifications/enhancements have been implemented; perform application software troubleshooting. Requires BS in computer science or engineering + 1 year exp. $42,000/year. 40 HR/WK. HRS 8-5. Job in various locations throughout US. Mail resume to ISS, Att: VC, 1110-D Elden Street, Ste 304, Herndon, VA 20170.

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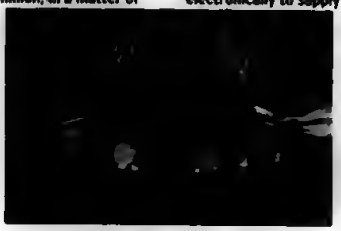
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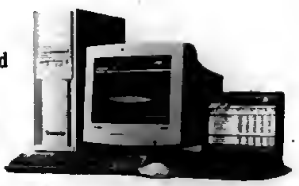
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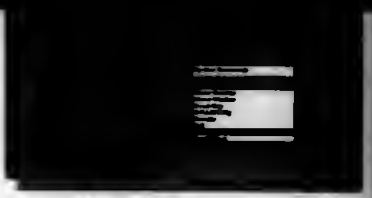
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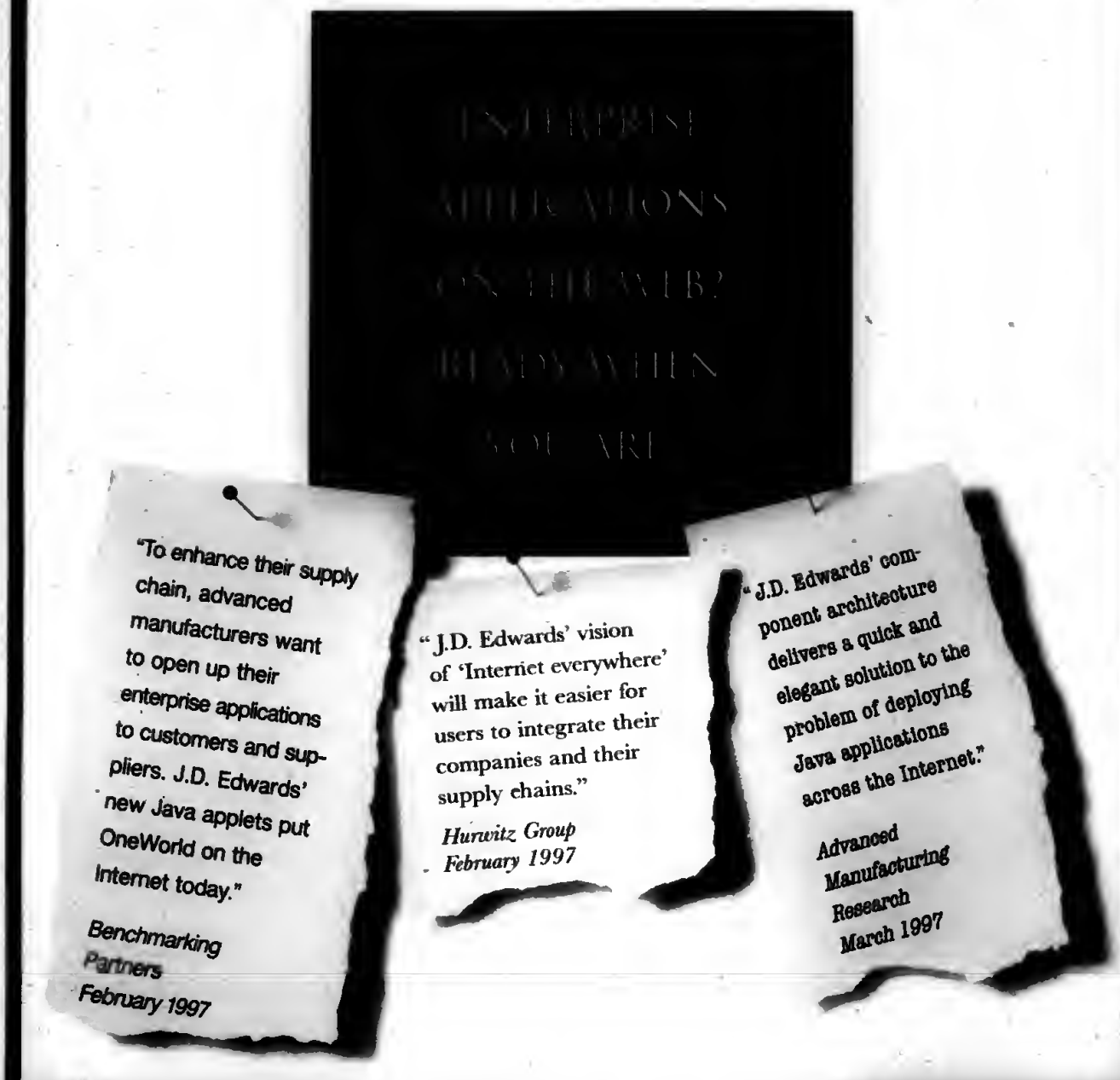
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The Week in Stocks

Gainers

PERCENT

Systemsoft Corp.(L)	45.9
Creative Technology Ltd.(H)	33.0
Parta Software	32.3
Equity Corp.	31.2
BBN Corp.	24.5
ITXnet Corp.	21.2
Netcom On-Line	20.9
Proteon Inc.	20.7

DOLLAR

Computer Task Group(H)	8.13
US Robotics	8.00
IBM	7.63
Xilinx(H)	6.00
BBN Corp.	5.63
Computer Sciences	5.63
Compuss Computer Corp.(H)	5.13
BMC Software Inc.(H)	5.06

Losers

PERCENT

Optical Data Systems Inc.	-40.0
Network Computing Devices	-26.3
Cisco Systems Inc.	-24.0
Micrografx Inc.	-23.1
Network General	-21.9
Xylan Corp.	-20.9
Parallan Technologies	-20.7

DOLLAR

Microsoft Corp.(H)	-6.06
MFE Corp.	-5.88
Parametric Technology	-5.88
Oracle Systems	-4.88
Security Computing Corp.	-4.50
3Com	-4.38
Computer Horizons Corp.	-4.38
Parallan Technologies	-4.38

INDUSTRY ALMANAC

Macromedia poised for rebound

Its stock sells for one-sixth of its price a year ago, and earnings have tanked, but Macromedia, Inc. in San Francisco (Nasdaq: MACR) still has promise, analysts say.

"I would characterize myself as cautiously optimistic," says Hany Nada, a senior analyst at Piper Jaffray, Inc. in Minneapolis. "The main reason: They are the de facto standard of multimedia development on CD-ROM or the Web."

Says Larry Marcus at Alex. Brown & Sons, Inc. in New York, "The business is basically in transition, and it's a very difficult to tell how their earnings are going to come in, ... but they're still No. 1 in multimedia software and have $100 million in cash and great distribution channels."

Several analysts give Macromedia a Neutral rating, meaning it isn't likely to outperform the Nasdaq Stock Market average.

In the past year, the market for multimedia authoring software lagged, given the movement of so many companies to the World Wide Web, Nada says. "Now that the sites are there, there are so many static Web pages, and people will want to add rich content," he says. Hence, a market for Macromedia.

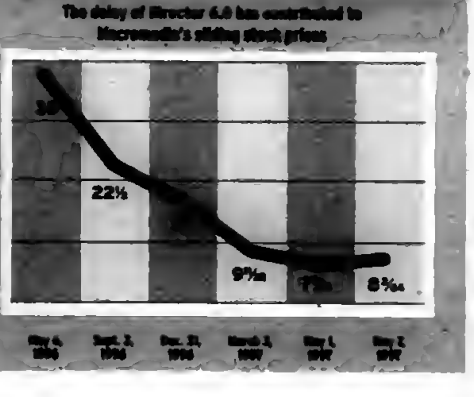
Several analysts say they are keen on a team of new top managers at Macromedia, including President Rob Burgess, who came on board in November.

Macromedia reported a loss of 16 cents per share, with revenue down 8%, for the fiscal year ended March 31.

Last quarter's revenues was hurt by a delay in shipments of Director 6.0, an upgrade of the multimedia production tool and the company's biggest product, analysts say. But they add that it was a wise decision to delay the product to iron out the bugs. Release is now expected in June. — Matt Hamblen

DIRECTOR DELAY

The delay of Director 6.0 has contributed to Macromedia's sliding stock prices



Exch	52-Week High	52-Week Low		Mar 9 2000	Wk Net Change	Wk Pct Change
COMS	81.88	24.00	3 COM Corp	38.00	-4.75	-14.3
AIT	65.00	49.63	ADVANCED TECH Corp	62.25	-1.13	-1.8
ASND	80.25	38.13	Ascend Communications	49.75	-0.88	-1.9
T	49.88	38.75	AT & T	40.38	-1.88	-4.1
BNYN	10.75	9.19	Banyan Systems Inc.	9.88	0.375	15.4
BAY	36.38	15.38	Bay Networks Inc.	19.88	-0.38	-1.9
BEL	71.38	55.13	Bell Atlantic Corp	68.63	0.63	5.7
BLS	47.63	38.25	BellSouth Corp	44.63	0.00	0.0
BRXT	42.25	9.75	Broadband Technology	12.63	1.00	7.3
CS	43.63	35.38	Computer Systems	36.38	-0.50	-0.0
CSCC	51.25	23.38	Cascade Communications	36.25	-1.13	-2.4
CCBM	18.25	8.38	Century Communications	9.88	-0.38	-1.9
CSCO	75.75	44.75	Cisco Systems Inc.	60.75	3.63	8.5
CLIX	8.50	7.88	Compression Labs Inc	3.44	0.13	5.4
CMNT	10.50	4.75	Computer Network Tech	5.88	-0.13	-2.4
3COM	11.75	4.75	CrossCom	5.00	0.00	0.0
GIGI	35.88	12.63	DSC Communications	22.13	1.88	9.3
FORE	44.75	19.88	FORE Systems Inc.	38.38	1.44	0.0
GDC	18.88	8.13	General Datacomm Inds	7.75	0.75	10.7
GSX	48.75	38.13	General Signal Networks	40.00	0.38	0.0
GTE	48.38	39.75	GTE Corp	40.63	3.00	4.6
LU	60.13	30.63	Lucent Tech (H)	52.88	3.50	5.9
MADGF	36.88	8.56	Madge Networks NV	7.13	0.88	7.5
MCIC	30.63	22.38	MCI Communications Corp. (H)	28.00	-0.44	-1.1
MNPI	24.88	5.50	Micrognon Inc.	16.13	1.13	0.8
NETM	10.38	8.38	NetManage Inc	3.44	0.19	5.8
NTRA	13.88	1.88	Netrix Corp. (L)	1.88	-0.25	-11.9
NCDI	18.21	3.00	Network Computing Devices	10.13	0.25	2.9
NWK	10.38	11.13	Network Equipment Tech	13.88	0.63	4.2
NETG	30.25	12.38	Network General	17.00	1.81	11.9
NN	27.25	20.25	Newbridge Networks Corp	20.25	1.00	0.5
NT	27.00	45.00	Northern Telecom Ltd. (H)	17.20	2.38	0.5
NOVL	15.63	7.88	Novell Inc	8.44	0.81	10.7
NYN	53.25	42.00	Nynex Corp	52.88	0.50	1.0
OCTL	31.75	10.38	Octel Communications Corp	17.50	0.50	2.9
ODSI	25.88	8.75	Optical Data Systems Inc.	14.44	0.44	3.1
PCTL	41.25	8.25	Picturetel Corp.	10.38	1.38	12.4
PTON	6.11	1.31	Proteon Inc.	1.38	0.38	20.7
RACO	7.00	2.38	Racotek Inc.	2.38	0.38	2.5
RETX	19.88	3.38	Retix	5.88	0.88	8.5
SBC	38.25	46.00	SBC Communications	40.50	1.00	2.7
SFA	10.38	12.00	Scientific Atlanta Inc	17.88	0.38	2.5
SNVA	87.25	8.25	Sonus Corp	13.38	2.88	28.3
FON	48.38	34.38	Sprint Corp	45.88	1.75	0.0
SMSC	18.88	8.25	Standard Microsystems Corp	9.88	0.88	0.0
USW	17.25	27.25	U S West Inc.	34.38	-0.25	-0.7
USRX	105.50	40.75	US Robotics	65.88	8.88	13.9
XIRC	31.13	7.38	Xircom	12.88	1.38	14.5
XYLN	76.00	12.38	Xylan Corp	16.25	-0.38	-2.7
AALR	13.25	6.13	Advanced Logic Research	75.88	-0.13	-1.1
AAPL	48.88	15.11	Apple Computer Inc.	17.19	0.44	0.5
ASTA	2.38	3.94	AST Research Inc.	3.38	0.13	2.4
CPQ	94.38	48.88	Compaq Computer Corp. (H)	84.38	5.13	0.7
DELL	93.25	20.25	Dell Computer Corp (H)	92.88	3.13	3.5
GATE	66.63	27.75	Gateway 2000 Inc.	60.88	1.38	0.5
HWP	60.88	37.75	Hewlett Packard Co.	53.75	0.63	1.2
MUEI	25.38	8.75	Micron Interfaceless Inc.	23.88	1.31	0.5
NIPNY	65.75	49.88	NEC America (H)	60.63	2.38	4.2
SGI	48.88	12.63	Silicon Graphics	15.50	-0.25	-1.6
SUNW	35.75	22.88	Sun Microsystems Inc	30.75	1.88	0.5
AAHH	14.88	8.13	Arboms Corp	8.75	-0.50	-5.4
DGN	34.88	9.88	Data General Corp (H)	22.13	2.75	11.3
DEC	54.38	23.88	Digital Equipment Corp	31.88	0.38	0.5
IBM	170.13	89.13	IBM	167.88	7.63	4.8
MDCO	20.25	2.88	Madisons Data Inc.	4.88	0.31	8.5
NETF	8.13	1.19	NetFrame	1.38	-0.00	-4.8
SQNT	30.11	10.50	Sequent Computer Sys.	20.13	-0.88	0.5
TEXN	4.88	1.88	Sequoia Systems Inc.	2.75	0.25	10.0
SPA	43.25	16.63	Stratus Computer Inc. (H)	41.38	1.63	4.1
TDM	15.25	8.63	Tandem Computers Inc	13.38	0.75	5.8
UIS	9.13	8.38	Unisys Corp	8.38	0.38	0.5
ADBE	47.13	28.50	Adobe Systems Inc. (H)	42.63	0.56	1.3
AMSWA	7.81	3.75	American Software Inc.	5.38	0.31	0.5
APLX	48.00	3.13	Applix Inc.	4.88	-0.25	5.1
ARSW	20.00	12.00	Arbor Software	20.00	7.00	0.5
ADSK	42.75	20.38	Autodesk Inc	38.38	0.50	1.0
BGSS	52.88	14.88	BGS Systems Inc.	20.13	1.13	5.8
BMCS	51.38	25.38	BMC Software Inc (H)	38.88	0.38	11.3
BOOL	27.88	18.38	Bindle and Bindle	21.63	1.19	0.1
BORL	13.13	4.75	Borland Int'l. Inc.	8.88	-0.75	-7.7
BOBY	58.38	7.25	Business Objects	40.88	0.44	4.3
CAYN	9.25	3.88	Caymen Software Inc	1.88	0.00	0.5
CNTR	6.75	3.13	Centura Software (L)	1.44	-0.38	20.7
CODNF	39.50	18.25	Cognos Inc	21.88	4.88	14.8
CA	38.88	37.25	Computer Associates	52.63	0.38	1.2
CVN	12.75	3.13	Computervision Corp	5.88	0.38	10.7
CPWR	48.00	15.25	Compuware Corp (H)	30.88	2.25	5.7
CSRE	32.88	10.25	Cognizant Inc	11.63	-0.31	-4.6
COSF	13.88	3.00	Cosel Corp	5.44	-0.13	3.3
DWTI	7.25	2.63	Datawave Technologies Inc.	3.31	0.31	10.4
FILE	36.38	8.50	Filenet Corp	12.88	2.38	21.2
FRTE	81.75	7.25	Forte Software	13.56	1.31	12.3
FTPS	18.38	4.31	FTP Software Inc. (L)	5.88	0.38	15.7
HUMCF	45.25	32.00	Hummingbird Comm. Ltd.	31.11	1.88	14.3
HYSW	94.38	10.25	Hyperion Software Corp	19.00	2.25	12.4
IMNC	10.38	11.88	Information Resources	14.63	1.11	8.1
IFMX	31.11	8.38	Informix Corp	8.38	0.88	8.2
INGR	18.38	8.25	Intergraph Corp	8.38	0.50	0.0
LEAF	2.36	9.81	Interleaf Inc (L)	1.88	0.38	5.7
ISLI	12.38	2.25	Intersolv Inc	9.88	1.38	30.8
INTU	35.75	20.88	Intuit Inc.	25.62	1.44	6.5
TLC	38.13	3.88	Learning Co. (The)	8.38	9.88	0.5
LGNX	17.75	4.13	Logic Works	5.88	0.25	4.8
MAPS	98.38	7.38	Mapinfo Corp	20.75	-0.25	-2.4
MATH	8.38	2.19	MathSoft	2.50	0.50	0.0
QCAF	65.50	29.88	McAfee Associates	36.25	0.25	0.0
MENT	18.38	6.50	Mentor Graphics	7.25	0.88	3.6
MFGY	24.38	9.75	Micro Focus (H)	25.00	1.50	7.0
MCRI	18.63	4.88	Microstrategy Inc	3.25	0.88	1.3
MSFT	133.38	53.75	Microsoft Corp (H)	116.94	-4.56	3.8
ORCL	51.88	43.00	Oracle Corp	40.75	1.38	3.7
PMTC	64.25	34.88	Parametric Technology	44.13	-2.88	-6.0
PARQ	14.63	1.19	ParcPlace Systems Inc.	1.25	-0.19	-9.1
PSFT	56.75	28.25	Peoplesoft	30.38	1.88	4.2
PTEC	20.38	11.00	Phoenix Technologies (L)	12.75	1.19	10.3
PSQL	15.75	8.38	Platinum Software	9.38	1.13	13.8
PLAT	18.75	8.56	Platinum Technology	11.88	-0.06	-0.5
PRGS	23.00	12.13	Progress Software Corp	17.88	0.88	2.3
RNBO	24.00	18.75	Rainbow Technologies Inc.	14.38	-0.13	-0.9
REDB	87.75	5.00	Red Brick Systems Inc.	3.38	-0.63	-7.5
SAPE	48.25	29.75	Sapient Corp	41.75	3.88	2.9
SCOC	9.11	4.13	SCO Inc (L)	8.38	0.25	3.7
SDTI	36.38	21.88	Seagate Distance Tech	31.13	3.25	11.3
SQTA	19.75	8.88	State of the Art	10.25	0.38	3.5
SSW	31.38	27.88	Sterling Software Inc	27.13	-0.13	-0.4
SDRC	22.50	15.88	Structr Dynamics Research	23.38	1.88	6.8
SYBS	27.88	12.13	Sybase Inc.	18.63	1.88	6.4
SYMC	18.38	8.75	Symantec Corp	16.63	1.25	8.1
SNPS	30.88	21.75	Synopsys	46.81	-0.06	-0.2
SSAG	35.00	2.88	System Software Assoc	8.38	0.38	1.8
SYSF	30.38	7.38	Systemsoft Corp (L)	21.88	8.38	41.8
TRLN	8.35	1.88	Telelogic Corp	2.38	-0.00	-0.3
VIEW	17.88	8.38	ViewLogic Systems	15.38	-0.06	-0.4
VMRK	12.88	5.88	Vmark Software Inc.	7.13	0.56	7.5
WALK	15.88	9.38	Walker Interactive Systems	13.88	1.94	10.7
WALL	27.88	12.25	Wall Data Inc	23.88	2.13	9.8
WANG	34.13	25.38	Wang Laboratories Inc.	29.13	2.38	7.7
AOL	36.13	22.38	America On-Line	28.50	3.25	9.3
BBN	20.38	15.13	BBN Corp	28.88	5.63	24.5
CSRV	20.88	8.88	Computer Horizons Corp.	10.38	1.88	46.2
EQTY	25.75	8.38	Equity Corp	12.88	3.88	31.2
LCOS	22.13	3.75	Lycos Inc.	13.38	1.25	9.1
NETC	44.88	7.88	Netcom On-Line	12.88	2.25	20.9
NSCP	75.25	21.88	Netscape Comm. Corp.	31.75	8.38	18.1
OMSH	40.25	8.38	Open Market Inc.	9.13	1.88	17.7
PSLK	19.38	5.50	Prodigy	7.75	3.38	31.0
QDEX	13.13	2.88	Quadrotex Corp	2.88	-0.94	-7.5
RAPT	10.75	8.38	Rapsite Systems	13.63	-1.88	-8.8
SCUR	36.38	4.75	Secure Computing Corp.	8.75	-3.38	-18.2
SPYC	25.25	8.38	Spyglass Inc	7.88	0.38	8.5
YHOO	37.38	13.38	Yahoo! Inc	36.13	-1.88	-2.8
AMD	20.50	10.25	Advanced Micro Devices	16.88	1.25	8.5
ADI	29.88	19.75	Analog Devices Inc.	28.25	0.38	6.3
CHPS	20.88	7.88	Chips and Technologies	8.38	0.88	5.5
CRUS	25.75	8.88	Cirrus Logic	10.13	0.38	8.8
CY	10.38	9.13	Cypress Semiconductor Corp.	15.25	0.25	1.7
CYRIX	30.88	31.38	Cyrix	23.13	1.13	5.4
INTC	169.88	64.13	Intel Corp	158.75	2.75	3.8
LSCC	56.53	25.75	Lattice Semiconductor (H)	30.00	2.63	4.7
LSI	29.25	17.88	LSI Logic Corp (H)	43.25	1.25	3.8
MCRL	28.25	12.88	Micrel Semiconductor Inc (H)	46.81	3.81	5.8
MU	49.25	16.88	Micron Technology	37.88	-0.88	-2.3
MOT	59.25	44.13	Motorola Inc	51.13	3.38	6.8
NSM	32.38	13.38	National Semiconductor	26.63	1.88	7.8
TXN	90.88	60.88	Texas Instruments (H)	85.38	3.88	8.5
VLSI	29.25	10.38	VLSI Technology	24.25	0.75	3.2
XLNX	60.88	24.88	Xilinx (H)	56.25	8.38	21.8
ZLG	80.88	14.88	Zilog Inc	20.75	1.25	6.4
ADPT	46.88	17.38	Adaptec Inc.	16.88	0.38	0.9
APCC	31.38	8.88	American Power Conversion	21.38	0.25	1.2
CBEX	7.63	1.88	Cabletron Corp (L)	1.13	0.38	5.9
CREAF	13.38	3.38	Creative Technology Ltd. (H)	10.38	3.38	32.5
DACE	24.88	4.11	Data Race Inc	12.38	1.88	15.1
STEM	12.50	5.38	Datatape Corp	9.88	0.13	1.4
EMC	41.75	10.38	EMC Corp	38.13	0.38	2.5
EMLX	21.38	12.38	Emulex Corp	18.38	1.50	9.0
ESCC	16.88	10.88	Exabyte Corporation	24.00	-0.25	1.0
EXBT	20.75	8.88	Exabyte	15.94	1.44	9.9
ISLU	4.13	1.25	Intelligent Inst. Systems	1.11	0.00	0.0
ICM	10.13	12.00	Iomega Corp	10.38	2.38	14.4
IPLS	8.25	1.25	IPL Systems Inc	1.50	-0.19	-11.1
KBRG	33.00	23.63	Kobrag Inc	31.38	3.13	10.3
MTSI	28.75	12.88	Micro Touch System Inc.	24.25	2.75	23.8
PEAK	27.88	8.88	Peak Technology Group	17.81	0.13	0.7
PNCL	11.88	9.97	Pinnacle Micro Inc.	1.88	0.38	8.0
QUIC	8.38	2.88	Quic Inc.	3.63	-0.88	12.5
QNTM	30.38	10.38	Quantum Corp (H)	44.38	1.81	0.1
RDUS	4.75	8.25	Radius Inc	8.31	0.38	0.0
SEG	10.25	18.13	Seagate Technology	51.88	1.25	2.5
STK	54.38	0.88	Storage Technology	38.38	1.38	2.9
STLC	3.75	0.44	Sterling Inc Corp	0.38	0.38	0.0
TEX	30.88	0.88	Tektronix Inc. (H)	57.88	2.38	4.2
WDC	77.88	19.88	Western Digital Corp	70.13	2.88	0.5
XIRC	65.88	44.38	Xircom Corp (H)	51.88	2.75	4.5
AMSY	37.13	15.75	American Mgmt Systems	23.75	1.88	8.3
AMLY	36.63	17.88	Analysts Int'l. (H)	25.88	8.38	12.9
AUD	48.75	35.63	Auto Data Processing (H)	47.88	0.63	1.3
BDAM	20.75	10.75	BDM International Inc	22.75	1.88	4.3
CAPB	37.38	18.75	Cambridge Tech Partners	27.88	0.23	0.9
CSN	54.88	20.38	Computer Sciences Corp	34.63	0.38	2.8
CDO	38.50	20.88	Compuserve Inc (H)	25.38	1.88	8.3
CPU	30.88	13.25	CompUSA Inc.	21.75	1.38	7.0
CMEZ	54.88	19.88	Computer Horizons	49.88	0.38	0.0
CSC	60.88	57.88	Computer Sciences	71.38	3.63	8.5
TSK	36.88	23.25	Computer Task Group (H)	30.13	8.13	10.9
CBAT	30.88	25.75	Control Data Systems Inc.	30.38	0.38	2.3
EGGS	12.88	3.88	Egghead Discount Software	4.63	-0.13	-2.6
EDS	40.56	30.13	Electronic Data Systems Corp	36.44	0.13	0.3
IMAC	30.88	15.38	Imagon Corp	27.88	3.75	10.3
INEL	11.88	2.25	Intelligent Electronics	2.50	-0.51	-11.3
KEA	52.75	30.38	Keane Inc. (H)	31.13	2.75	5.3
MICA	25.88	10.88	Micronage Inc.	14.88	0.38	0.4
PAYX	53.88	38.25	Paychex	51.11	1.88	3.3
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REY	30.63	18.38	Reynolds and Reynolds	21.88	0.38	4.3
SCBI	10.88	14.44	SCB Computer Tech. Inc.	27.13	-0.06	-1.4
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SDT	60.75	30.25	Sungard Data Systems	47.25	1.88	2.3
VBT	28.75	8.38	VanStar Corp	9.13	1.88	60.1

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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License law may limit liability

CONTINUED FROM PAGE 1

ety for Information Management (SIM) are up in arms.

"If a developer is willing to sell their software, then they should stand by it," said an IS manager at a large Midwest manufacturer, who asked not to be named. "No other products get this kind of treatment. If I buy a defective car, I have laws that protect me."

There is currently no real standard for licenses, although most developers create similarly worded agreements. The licenses are lengthy disclaimers that attempt to absolve developers of all liability. But because software is currently sold as "goods" — just like toasters and automobiles — users can still sue developers. In past cases, existing licensing agreements haven't stood up in court.

FOLLOW THE CODE

The developer community wants to change that. They want software licensing to be governed under the Uniform Commercial Code (UCC), a standard legal code widely used in contract law to govern liability and product responsibilities.

Hence, vendor interest in a sweeping proposal called Article 2B. It is jam-packed with legalese that leaves it open to various interpretations. Emotional responses from both sides have been sparked by several key provisions.

Those who oppose UCC Article 2B allege that vendors will gain increased leverage over users based on several items that seek to limit liabilities and make it harder for users to seek recourse. These include the following:

- Concern that vendors will be able to specify in their contracts the state or country in which users will be able to sue them, thus making it harder and more costly for users to pursue legal action. Not so, said Mark Nebergall, vice president and counsel at the SPA. In the event of a legal dispute, it is likely to default to the home state of the user, he said.
- Concern that vendors won't assume liability for consequential damages. Users would be able to get a refund only for the purchase price of the software regardless of system or hardware damage, loss of data, loss of business or money spent to correct the problems. Proponents claim current law isn't much different.
- Concern that vendors will be able to include "self-help provisions" that allow them, via an access code into a user's system, to turn off the software for nonpayment or violation of the software contract. Proponents claim that is standard and fair practice.

"A bank can repossess trucks if a delivery company fails to make its payments," Nebergall said.

- Concern that vendors will be able to stipulate that any changes made to the software — such as adding modules or modifying any portion of the code — will render the warranty null and void. To which Nebergall responded, "If you violate a contract [today], then it is void."

Most large companies have a vested interest in this issue, but the complexity of the proposed law has mostly garnered the attention of corporate lawyers who specialize in intellectual property and contract law. Chief information officers and other information technology executives said they are concerned about the ramifications, but most claim the 270-page proposal is daunting, and they are letting their lawyers track the progress of the proposal.

Large companies believe this is a dangerous situation, said Susan Nycum, head of the Intellectual and Information Technology Practice at Baker & McKenzie, a Palo Alto, Calif. The law firm represents SIM, a trade association made up of several hundred CIOs.

"[UCC Article 2B] favors the licenser, and some users feel that vendors might be able to use some of these provisions [such as the self-help provision] as a way to threaten them," Nycum said.

She said the complex nature of the licenses, and user skepticism about signing them, could lead to protracted negotiations. "Users feel it will probably double the expense of procurement," she said.

RECKLESS BEHAVIOR

"Customers lose their rights, and this creates a set of rules that encourage vendor irresponsibility," said Cem Kaner, a programmer and attorney at The Law Office of Kevin Kaner, an intellectual property law firm in Santa Clara, Calif. "Vendors will have no liability for viruses. At most, they will have to give a refund even if their software wreaked huge amounts of damage to the user's system or business."

But one IS manager said the changes probably won't have a major effect on users.

"Most software licenses already limit consequential damages," said David Gusman, MIS director at the Cleveland law firm of Thompson, Hine & Flory. "Just because [software developers] have the right to do this doesn't mean the market will accept it. There will always be a hungry vendor that will say 'No, we're not going to do that to you.'" □

COMPUTERWORLD

For these and other related links, point your browser at www.computerworld.com/links/gyoyzlleonalink.html

- Software licensing and license management resource guide: www.globetrotter.com/resource.htm
- Software licensing issues: www.halix.net/sgroomr/training/License.html

Just click here

The provisions proposed in UCC Article 2B are expected to have far-reaching effects for individuals who buy shrink-wrapped software.

The proposed "click-wrap" licensing scheme would let software makers embed the licensing agreements and details in the software. That would force users to agree to the terms and conditions by clicking on an "OK" button to continue the installation process. If users didn't agree to the terms, they couldn't continue the installation process.

That method of informing users of licensing terms could make it difficult for users to return opened software packages to retailers.

Some industry observers and consumer watchdog groups argue that most users are unlikely to read the licenses carefully — which may strictly limit vendor liability beyond a refund of the software's purchase price — because when users unwrap their new software, they are primarily interested in installing it.

"The licenses are contracts, and agreements are to a different mode. Buying is one decision, and getting the software home and installing it is a different decision," said Todd Paglia, a staff lawyer for the Consumer Project on Technology at Ralph Nader's Center for the Study of Responsive Law.

Nader's group contends that the embedded licenses will force users to give up all their rights.

"The basic issue is that the software companies are not satisfied with the already awesome leverage they have over users with current contractual obligations," Nader said.

Spokespeople for the Software Publishers Association and the Business Software Alliance could not be reached for comment.

— Lisa Picarille

Open systems storage lives up to its name

By Tim Ouellette

GLEN WHITE estimated that his growing firm's disk storage needs would jump 500% in a year, so he knew he needed flexible storage devices to handle the influx of data.

White didn't want to have to tell his boss that the company couldn't sustain its current rate of growth simply because its storage didn't support new server platforms.

SERVER STORAGE

Distributed workgroup servers are becoming more mission-critical and are moving back to the data center. That means IS managers like White, chief information officer at Excel Communications, Inc. in Dallas, need to find disk arrays that can support multiple server platforms. These arrays give users more flexibility in where and how to group data and storage devices as their networks and server choices change.

At Excel, the expanding telephone company is creating its own switched long-distance network.

So White bought Hitachi Data Systems, Inc.'s 5700 disk arrays to support a move to a slew of Windows NT servers, mixed in with Unix and other platforms needed to handle a new crop of customer service and marketing applications.

"We are providing more functionality and requiring more disk [space]," White said. "We have experienced tremendous growth, and the previous [PC server-based] storage environment limited what we could do."

"This is the biggest trend in the open storage market," said Tom Lahive, an analyst at International Data Corp. (IDC) in Framingham, Mass.

The market for open systems storage overtook mainframe-only disk sales last year. And IDC predicts sales of noncaptive devices — or storage open to multiple server platforms — will jump from $5 billion last year to $8 billion this year.

MEET THE DEMAND

The following vendors are responding:

- Sun Microsystems, Inc. in Mountain View, Calif., this summer will open up its disk arrays to Windows NT and Hewlett-Packard Co.'s Unix servers.
- EMC Corp. in Hopkinton, Mass., is optimizing its disk arrays to handle the different data types created by each brand of the Unix operating system.
- IBM is offering special adapters that let its 7133 arrays, which use a different storage interface than other products on the market, store data from non-IBM platforms such as HP and NT. □

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COMMENTARY

Larry takes a walk

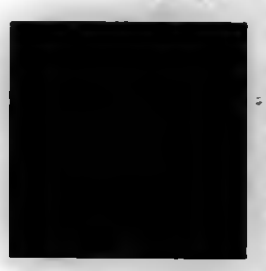
David Coursey

I promised that when Oracle boss Larry Ellison finally unveiled a program to "save" Apple, I'd write about it. He has, and I will. His plan, as you know by now, involved walking away from Apple, apparently without ever purchasing a single share of the company. But I'm getting ahead of myself.

Two weeks ago, I was hosting my Internet Showcase conference. There were approximately 600 people in the room, and in front of each was a Touch-Tone pad for answering questions posed via the Iris audience voting system. The great thing about Iris is you can enter questions just about as quickly as you can type them.

Somehow the topic of Apple came up. I asked the Iris people to enter two questions: "Should Larry Ellison buy Apple?" and "Would you work for Larry Ellison?" The response to the first question was a bit of a surprise — 53% said he should.

The second question wasn't nearly as evenly divided — 87% said they wouldn't work for Larry. When someone commented that he didn't realize 13% of the crowd worked at Oracle, another person chimed in, "No, it's 20%!" That got a big laugh.



The next day, Larry announced he wasn't going to make a bid — with all the usual caveats that he just might bother us again someday in the future — and I asked a different question: "Larry Ellison says he's not going to buy Apple. Is this a good thing?" Seventy percent of the audience, perhaps realizing that an Oracle/Apple union wouldn't solve Apple's problems, said it was.

With Larry out of the way, attention now shifts to Gil Amelio's leadership as Apple's chairman and CEO. He's moving his office from leased space to the company's research and development campus. I've heard that some engineers are upset that Amelio is taking "their" space and that there's even some enthusiastic wagering as to whether Amelio will still be at Apple when the suite is finished.

IT'S SHOWTIME

This week is important for Apple as the company holds its World Wide Developers Conference. Last year, Gil nonplussed the conference crowd about as badly as he did the Macworld audience in January. Maybe this time he'll spare us the too-fashionable clothing and actually say something. And do it in, say, 20 minutes rather than three hours.

More important, Apple seems prepared to show off the work it's done on Rhapsody, the Next/Apple operating system. A developer release is due soon, and inquiring minds at the conference will watch to see which user interface appears. Will Rhapsody look like the Mac OS (a big win as far as I'm concerned) or like something from Next (a big loss)?

Apple won't die if the developers conference is unexceptional, but a good showing would give its partisans a great boost. System 8 looks good — it has many of the features of Microsoft's Internet Explorer 4.0 in a very nice Macintosh interface. And I look forward to playing with a World Wide Web server I'm buying.

Whatever happens, I'll leave this story to the news writers and take a breather from Apple-related topics for a while. I'm all too aware that this Silicon Valley soap opera plays better in Northern California than in the pages of *Computerworld*.

But the whole Apple/Ellison deal was so bizarre, I felt someone had to comment. □

Coursey, an analyst and consultant, is editor of "coursey.com," an online newsletter available at www.coursey.com. His E-mail address is david@coursey.com.

Do yourself a favor: Befriend a legal eagle

Frank Hayes

Bill Gates and Paul Allen have known each other since high school. Together they founded Microsoft. Allen went on to buy Ticketmaster and a lot of other companies. So why is Paul Allen's Ticketmaster suing Bill Gates' Microsoft? Why else but the World Wide Web?

Microsoft's Seattle Sidewalk Web site is an entertainment guide to Seattle. It has several dozen links to Ticketmaster's Web site. Ticketmaster objects to the way its name and links are presented — and to the fact that Microsoft decided not to do a licensing deal. Result: one lawsuit, straight up.

Sound stupid? Maybe. But if you're putting applications on the Web, that kind of stupidity is waiting to happen to you, too.

Trademark misuse. Copyright infringement. Invasion of privacy. Libel. And that's just the stuff that could land you in court. It doesn't include the possibility of proprietary information landing in the hands of your competitors.

Your company probably has a crowd of experts who are paid to keep you out of this kind of trouble. They work in departments with names such as Corporate Communications and Public Affairs.



And although they may not know everything about what can go wrong with information that ventures outside your corporate walls, their training and experience is why they've been appointed gatekeepers for that information.

If you don't already know them, get acquainted. During the next few years, you'll be seeing a lot of each other.

Not long ago, the only time corporate IS had to deal with those gatekeepers was when a reporter from *Computerworld* or some other publication came sniffing around for a story. Before your CIO or managers or developers could talk about a project or product, the interview had to be cleared with the suits in the public relations department.

But now your IS shop is in the publishing business. That's what putting something on the Web is — publishing. And now, along with all the challenges of getting things technically correct, you've got the problem of making sure they're legally correct.

That clip art, those scanned images — you've been using them for a couple years in the internal version of your application, and nobody complained. Matter of fact, they livened up some otherwise dull data-entry screens. But you'd better make sure you've got the right to use them before they go up on your Web site.

While you're at it, make sure anything you say about your business partners or competitors is clean, too. That means including proper trademark notices and accurate information. Hey, millions of people may see your site — that's a pretty good reason for people to get upset if they don't like what's said about them.

The more interactive your site is, the more risks you take. If you run an online forum for customers, what do you do if a customer makes an outrageous statement about you or a competitor? What if one of your employees responds?

Or what if an employee inadvertently publishes proprietary information on the Web — especially at a time when your company isn't supposed to be saying anything, such as just before a stock offering or quarterly report?

Those are just the risks you face without worrying about the Web sites you link to. So start talking to those public-information gatekeepers now. Once the lawsuit arrives, it'll be too late.

Remember, if high-school chums like Allen and Gates can get into it over a Web site, it can happen to you. □

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.

The Back Page

alt.cw

Dispatches & Images from the fringes of the electronic frontier

I'D RATHER DO IT MYSELF



A few supermarkets are pushing the frontiers of self-service by handing shoppers a simple bar-code reader so they can scan merchandise as they roam the aisles. With the Personal Shopper from Symbol Technologies in Holtsville, N.Y., users keep a running tally by pressing the plus sign to add a new item or the minus sign if they put something back on the shelf. The result: A bar-coded transaction ticket that lets shoppers dash through an express pay station. A Kroger store in Nashville is testing the system.

Pataat watch

Recently issued U.S. patents (number, inventor/assignee, date)

A remote-controlled vehicle that travels on railroad tracks ahead of a train and notifies the train engineer of any track hazards in time for the train to stop. The pilot vehicle has an on-board computer that collects data from various sensors that can detect noxious gases, rail damage or visual obstacles, such as a stopped car at a crossing. (5,623,244, U.S. Navy, April 22)

Real-time tracking of betting activity at casino tables. Patrons use a magnetic card to check in at each table, and their betting activity is sent to a host computer via wireless transmission. (5,613,912, Harrah's Club in Reno, Nev., March 25)

System for "very fast entry of text into a computer." The user writes abbreviations of common words or phrases. The system looks them up in a customized glossary and expands the abbreviations into full text. (5,623,406, Jean D. Ichbiah, April 22)

Source: MicroPatent (www.micropat.com)



Keyboards of steel

Daisy Data in Newberrytown, Pa., claims that the Series 6800 stainless-steel keyboard with rubberized keypad resists water, dust and chemicals – not to mention Coke and Jolt. Pricing starts at $400.



TODD CZESCIUIO

Critters on a chip

Integrated circuits are literally taking on new life at the Oak Ridge National Laboratory in Oak Ridge, Tenn. Researcher Mike Simpson has developed a hybrid chip that has living organisms — in this case, bioluminescent bacteria — placed on a standard microchip. Simpson calls it "critters on a chip." The living sensors emit a visible blue-green light when they detect certain pollutants or explosives.

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Inside Lines

Bid on [redacted]

Last week, technologist Jon Udell took CEO Ted White saying he enjoys "nothing better than to beat the hell out of Oracle." Now, we provide evidence that the feelings of Redmond are quite mutual. An Oracle marketing official was [redacted] competition for Windows NT database, and he noticed [redacted] Oracle worries about. Microsoft, of course, then [redacted] no mention of Informix. So what about [redacted] truth, we really don't see Informix that much on [redacted]

Start the rumor mill grinding again

They've been at it for a while, [redacted] and dissatisfaction about a possible liaison between Computer Associates and Sybase. CA officials issued a standard policy "no comment" on the matter, while Sybase reported its customers [redacted] "We absolutely have every intention of remaining an independent company," Sybase was thought to be potentially up for grabs last year when it was in a financial quarter-losing streak. And the company has rebounded itself and shored up profits over the past few months.

Judge for Microsoft

Microsoft's Technical Conference that took in Orlando, Fla., was notable for the large percentage of female attendees. And what draw them to the conference? Well, the availability of day care was a big factor, said several attendees, who noted that single parents have a tough time making the necessary child care arrangements that would allow them to attend professional conferences.

Read his lips on [redacted]

In a [redacted] Corp. [redacted] unveiled [redacted] technology [redacted] company officials said the [redacted] would [redacted] allow [redacted] to [redacted] their [redacted] especially [redacted] applications. [redacted] with software, [redacted] Corp. [redacted] Inc. [redacted] messaging [redacted] — and it [redacted] 3Com per [redacted] about [redacted]

What a fax

Guy Kawasaki, chief evangelist at Apple, warned us three years ago the big question on the minds — [redacted] at a high-tech education conference held in Bellevue, Wash. Following Apple's recent "[redacted]" line, "you may be wondering how someone who made his Apple computer could possibly [redacted] the claimants to speak publicly about Apple," Kawasaki told the [redacted] "The answer," he said, "is really quite simple. I was hooked for life [redacted]"

Chips in [redacted]

Rumors about anything [redacted] company, Intel's [redacted] in New York, [redacted] at the [redacted] rollout was [redacted] meeting. The response [redacted] I want to know, but I'm trying not to read too much into it, OK?"

In need of cash, the HTML Writers Guild, a professional association for Web page authors, last week auctioned the domain name "wwwmall.com" — not to be confused with www.mall.com. The highest bidder, identified only as MRA, pledged $1,860 for the potentially lucrative cybermoniker. The Guild (www.hwg.org) claims 50,000 members worldwide. Meanwhile, publisher and conference organizer Mecklermedia acquired the rights to "internet.com" from The Internet Co., a Cambridge, Mass., consultancy that will go out of business after June 1. If you have tips about news, toys or domain names, contact news editor Patricia Keefe at (508) 820-8183 or patricia_keefe@cw.com.



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